Huntleigh
HEALTHCARE

Auto Logic™ 110

Auto Logic™ 200

and

Aura Logic™

Service Manual

SER0006

Issue 2
March 2004

CONTENTS

CHAPTER 1

Introduction 1

About This Manual 1

Numbering and Cross-Referencing in this Manual 1

Warnings, Cautions and Notes 1

General Warnings 1

General Description 1

Pump (Refer to Figure 1) 3

Auto Logic 110 Mattress Overlay (Refer to Figure 2) 3

Auto Logic 200 Mattress Replacement (Refer to Figure 2) 4

Aura Logic Seat Cushion (Refer to Figure 4) 4

Operating Principle 7

Pump 7

Alarms and Indicators (Refer to Figure 8) 8

Replacement Sub-Assembly Calibration 8

Pressure Transducer Calibration 8

Battery on the Control PCB Assembly 9

Mattress Overlay Core 9

Mattress Base Pad 9

Seat Cushion 10

Auto-Recognition System 10

System Start Up Sequence (Refer to Figure 8) 10

CHAPTER 2

Troubleshooting 1

Controls, Alarms and Indicators (Refer to Figure 10) 1

Diagnosing Faults 1

Diagnosing Faults using a Troubleshooting Table 2

Diagnosing Faults using the Event Logs on the Communicator Software 4

Checking for Self Set Technology (SST) Errors 6

Checking if the Pump is due for a Routine Service 6

Checking for SST Errors 7

Diagnosing Pump Faults using the Built-In Self-Test Routine with no PC 9

Checking the Status and Diagnosing Faults on the Intelligent Battery Pack 11

General 11

To Check the Battery Pack Status (Refer to Figures 14 and 15) 12

Battery Pack “Conditioning” Fault 13

Battery Pack Disposal 13

CHAPTER 3

Maintenance 1

Pump Service 1
Pump Maintenance Checks 2
Mattress Replacement and Mattress Overlay Service 2
Mattress Replacement and Mattress Overlay Maintenance Checks 3
Seat Cushion Service 3
Seat Cushion Maintenance Checks 3

CHAPTER 4

Testing 1

Pump Control Panel 1
Test Equipment 1
Checking the Basic System Operation 2
Checking the Pump Pressures without a Computer 2
Connecting the Pump to a Personal Computer (PC) 5
Laptop / Desktop PC 5
Computer Communication 5
Running the Communicator Software 6
Executing Commands and Test Sequences on the Command Menu 10
Executing Single Commands 10
Executing Test Sequences 11
Operating the Pump from a PC via the IR Interface Module 12
Closing the Communicator Software 13
Checking the Pump Pressures and Free Flows with a Computer 14
Checking the Calibration of the Pressure Transducer 17
Re-Calibrating the Pressure Transducer and Verifying the Pressures 19
Checking the Software Version of the Pump 19
Re-Calibrating the Pressure Transducer 19
Verifying the Pressures 21
Making Fine Adjustments to the Transducer Calibration 21
End of Test 21
Setting the Service Hours on the Pump 22
Checking the Sounder and Power Fail Alarm LED Indicators 23
Setting Up a New Control PCB Assembly 24
Setting the GMT Time and Date 25
Pressure Logging using the Communicator Software 26

Electrical Safety Testing 28
Electrical Safety Checks - Class II (Double Insulated) 28
Insulation Resistance Test 28
Dielectric Strength Test (Flash Test) 28
Leakage Circuit Test (USA) 28
Inflation Test of the Mattress Replacement, Overlay or Seat Cushion 29
Test Procedure 29

CHAPTER 5

Pump Repair 1

General 1
Pump Repair to Testing Requirements 1
Removing the Mains/Power Cordset 3
Installing the Mains/Power Cordset 3
Removing the Air Inlet Filter 3
Installing the Air Inlet Filter 3
Removing the Rear Case 5
Installing the Rear Case 5
Removing the Hooks 7
Installing the Hooks 7
Removing the Manifold Assembly 9
Installing the Manifold Assembly 9
Replacing the RFID (Radio Frequency Identification) Coil Antenna 13
Removing the Silencer Bag Assembly 14
Installing the Silencer Bag Assembly 14
Replacing the O-Rings on the Manifold Assembly 15
Removing the Compressor Assembly and Mounting Bracket 17
Installing the Compressor Assembly and Mounting Bracket 17
Removing the Compressor Assembly from the Mounting Bracket 19
Installing the Compressor Assembly onto the Mounting Bracket 19
Replacing the Compressor Assembly 21
Removing the Power Supply PCB (Printed Circuit Board) Assembly 23
Installing the Power Supply PCB (Printed Circuit Board) Assembly 23
Removing the Control PCB (Printed Circuit Board) Assembly 25
Installing the Control PCB (Printed Circuit Board) Assembly 25
Removing the PCB Mounting Pillars 25
Installing the PCB Mounting Pillars 25
Replacing the Battery on the Control PCB Assembly 26
Pump Labels 27

Replacing the Mains/Power Fuses on the Power Supply PCB Assembly 29
Replacing the Air Inlet Filter on the Compressor Assembly. 29
Removing the Membrane Label. 31
Installing the Membrane Label 31
Replacing the Rear Case 33
Replacing the Front Case 35

CHAPTER 6

Mattress Overlay Repair 1

General 1
Removing the Top Cover Assembly 2
Installing the Top Cover Assembly 2
Removing a Cell Assembly 5
Installing a Cell Assembly. 7
Removing the Manifold Tube Assembly 9
Installing the Manifold Tube Assembly 9
Replacing the Non-Return Valves. 11
Replacing the Partial Non-Return Valve Assembly at the Head End of the Mattress . . . 11
Replacing the Non-Return Valve at the Foot End of the Mattress 11
Removing the Low-Air-Loss (LAL) Patch Tube Assembly 12
Installing the Low-Air-Loss (LAL) Patch Tube Assembly 12
Separating the Mattress Overlay from the Mattress Base Pad 15
Attaching the Mattress Overlay to the Mattress Base Pad 15
Removing the Pump Tubeset Assembly 17
Installing the Pump Tubeset Assembly 17
Removing the CPR Assembly. 18
Installing the CPR Assembly 18
Removing the Manifold Connector Assembly from the Mattress Overlay. 18
Installing the Manifold Connector Assembly onto the Mattress Overlay 18
Removing a Retaining Strap Assembly 19
Installing a Retaining Strap Assembly 19
Replacing the Base Sheet Assembly 20
Press Stud Replacement 21

CHAPTER 7

Mattress Base Pad Repair 1

General 1
Removing the Manifold Connector Assembly from the Mattress Base Pad 3
Installing the Manifold Connector Assembly onto the Mattress Base Pad 3

Replacing the Draw Latches on the Manifold Connector Assembly . . . 3
Removing a Retaining Strap Assembly . . . 5
Installing a Retaining Strap Assembly . . . 5
Replacing the Base Pad Sub-Assembly . . . 5
Press Stud Replacement . . . 5

CHAPTER 8

Seat Cushion Repair . . . 1

General . . . 1
Removing the Top Cover Assembly . . . 1
Installing the Top Cover Assembly . . . 1
Removing the Welded Cell Assembly . . . 3
Installing the Welded Cell Assembly . . . 3
Removing the Pump Tubeset Assembly . . . 4
Installing the Pump Tubeset Assembly . . . 4
Removing a Retaining Strap Assembly . . . 4
Installing a Retaining Strap Assembly . . . 4
Replacing the Base Assembly . . . 6

CHAPTER 9

Intelligent Battery Pack Assembly . . . 1

General . . . 1
Installing and Removing the Battery Pack . . . 1
Checking the Status of the Battery Pack . . . 2
Battery Pack Status Label . . . 2
To Check the Battery Pack Status (Refer to Figures 75 and 76) . . . 2
Battery Pack Storage . . . 2
Battery Pack Disposal . . . 2
Recharging the Battery Pack . . . 3

CHAPTER 10

Patient Handset . . . 1

General . . . 1
Connecting the Patient Handset to the Pump . . . 1
Disconnecting the Patient Handset . . . 2

CHAPTER 11

Installing and Running the Communicator Software . . . 1

General . . . 1

Auto-Installing the Communicator Software 1
Manually Installing the Communicator Software 2
Main Installation Process for the Communicator Software 3
Running the Communicator Software 7

CHAPTER 12

Technical Specification. 1

Auto Logic / Aura Logic Pump 1
Intelligent Battery Pack 3
Auto Logic 110 - Mattress Overlay 3
Auto Logic 200 - Mattress Replacement 4
Aura Logic - Seat Cushion 4

CHAPTER 13

Parts List 1

General 1
Overall Assembly Parts List 1
Pump Assembly Parts List 2
Mattress Overlay Assembly Parts List 5
Mattress Base Pad Assembly Parts List 6
Seat Cushion Assembly Parts List 6
Intelligent Battery Pack Assembly 7
Test Equipment 7

CHAPTER 14

Service Contact Details. 1

CHAPTER 1

INTRODUCTION

1 About This Manual

Huntleigh Healthcare strongly recommend that their equipment is only serviced by trained personnel and provide courses for customers who wish to become licensed to service their own equipment. In no event will Huntleigh Healthcare be responsible for any service performed by customers or third parties.

This manual contains information on maintenance, servicing, repair, troubleshooting and testing for the **Auto Logic™ 110**, **Auto Logic™ 200** and **Aura Logic™** systems which comprise a pump and either a mattress overlay, mattress replacement or seat cushion respectively.

Read and understand this manual before attempting to service or repair the equipment.

Numbering and Cross-Referencing in this Manual

For all chapters in this manual:

- Page, section and paragraph numbering re-start at “1”.
- Figure and table numbering continue from the previous chapter.
- Cross-references which include a chapter number (and/or chapter title) refer to text in a different chapter. Cross-references which do NOT include any chapter number (or chapter title) refer to text within the same chapter.

Warnings, Cautions and Notes

WARNINGS given in this manual identify possible hazards in procedures or conditions which, if not correctly followed, could result in death, injury or other serious adverse reactions.

CAUTIONS given in this manual identify possible hazards in procedures or conditions which, if not correctly followed, could result in equipment failure or damage.

Notes given in this manual are used to explain or amplify a procedure or condition.

General Warnings

WARNING: BEFORE PERFORMING ANY SERVICE OR MAINTENANCE PROCEDURES, ENSURE THAT THE EQUIPMENT HAS BEEN ADEQUATELY DECONTAMINATED.

WARNING: VOLTAGES IN EXCESS OF 30 VOLTS RMS OR 50 VOLTS DC CAN, IN CERTAIN CIRCUMSTANCES, BE LETHAL. WHEN WORKING ON EQUIPMENT REQUIRING EXPOSURE TO LIVE, UNPROTECTED CONDUCTORS WHERE SUCH VOLTAGES ARE PRESENT, EXTREME CARE MUST BE EXERCISED.

2 General Description

The **Auto Logic 110**, **Auto Logic 200** and **Aura Logic** systems are automatic alternating pressure relief systems to aid the prevention, treatment and management of pressure ulcers:

- The **Auto Logic 110** system comprises a pump and a mattress overlay. The mattress overlay is designed to be placed on top of any standard mattress.

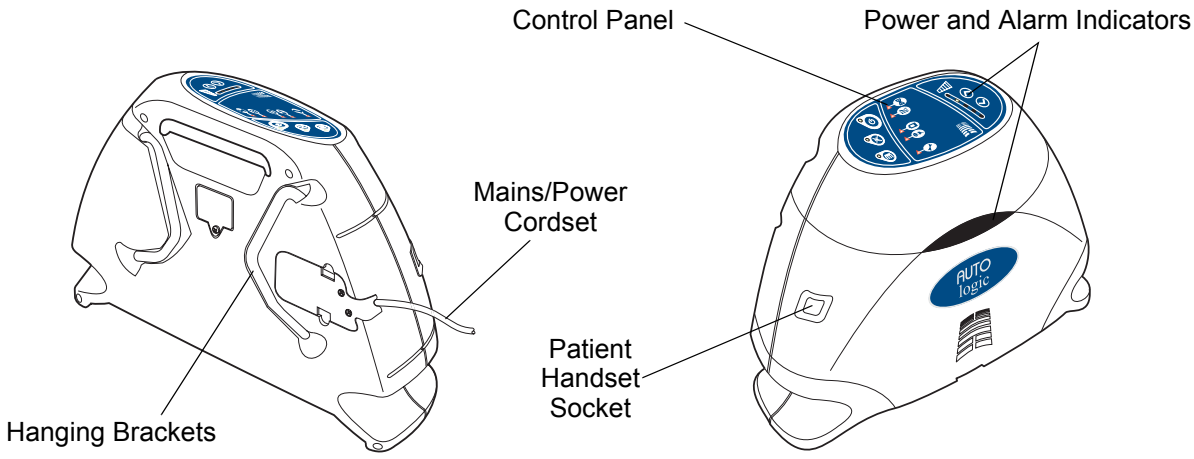


Figure 1 - Pump

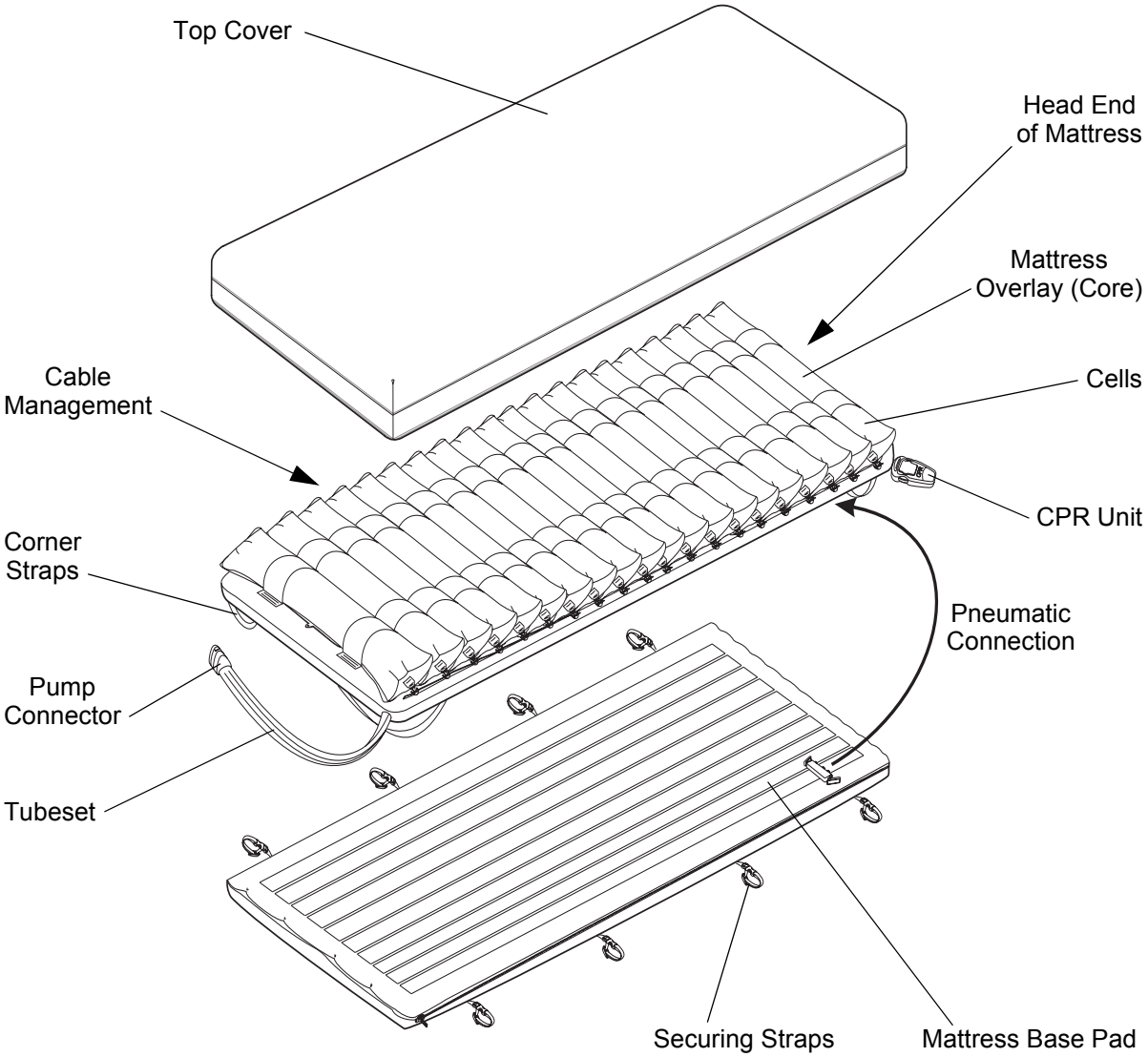


Figure 2 - Mattress Overlay and Replacement

- The **Auto Logic 200** system comprises a pump and a mattress replacement. The mattress replacement is designed to replace the standard mattress on a bed, and comprises a mattress overlay on top of a mattress base pad. The mattress overlay is similar to that on the **Auto Logic 110** system, but has two extra zips to secure the mattress base pad to it.
- The **Aura Logic** system comprises a pump and a seat cushion. The seat cushion is designed to be placed on top of any standard chair.

All three systems are designed to operate in either **Alternating** mode, which continuously changes the tissue pressure points providing a high degree of pressure relief, or **Constant Low Pressure (CLP)** mode, which provides a constant low pressure reduction and is used when a moving surface is contra-indicated for the patient.

Pump (Refer to Figure 1)

The pump provides a dynamic system of inflating the support surface underneath the patient, cycling every 10 minutes to produce periods of pressure relief for the whole body.

The single compressor pump has microprocessor-aided control and alarm functions, and has LED indications on the front case of the pump and the control panel on top of the pump.

An optional intelligent battery pack is available which allows the pump to be used independently of the mains/power supply. The battery pack slides onto the base of the pump, and recharges itself when the pump is operating from the mains/power supply.

A patient handset is an optional extra, and plugs into a socket on the side of the pump. It gives the patient control over the comfort settings of the mattress and also enables the patient to mute the alarm.

The **Auto Logic** systems do not have a pressure sensor pad in the mattress. Instead, the pump incorporates Self Set Technology (SST), which adjusts the air pressure within the mattress every 10 minutes in **Alternating** mode and 20 minutes in **Constant Low Pressure (CLP)** mode to suit the Body Mass Index (BMI) and position of the patient.

Auto Logic 110 Mattress Overlay (Refer to Figure 2)

The mattress overlay comprises a mattress core of 20 individual cells which support the patient (Refer to Figure 3). 17 of the cells inflate alternately, and the remaining 3 are static cells to support the patient's head. The 10 light blue alternating cells in the centre of the mattress core incorporate two small cells at either end of the main cell. These "cells-in-cell" are kept at a constant pressure and help the transfer of patients on and off the bed by keeping the edges of the mattress firm. The remaining 10 cells (5 at each end of the mattress) are dark blue.

The mattress core incorporates a low-air-loss patch under the cells to provide a constant bleed of air for additional patient comfort.

A CPR (Cardio-Pulmonary Resuscitation) unit is positioned at the head end of the mattress core, to allow the air to be evacuated in under 10 seconds, should a cardiac arrest occur.

The mattress overlay is connected to the pump via a 3-way tubeset which is permanently connected to the mattress overlay. The tubeset has a 3-way pneumatic connection which incorporates a flexible, compact anti-kink tube that is resistant to crushing and any subsequent obstruction of air flow.

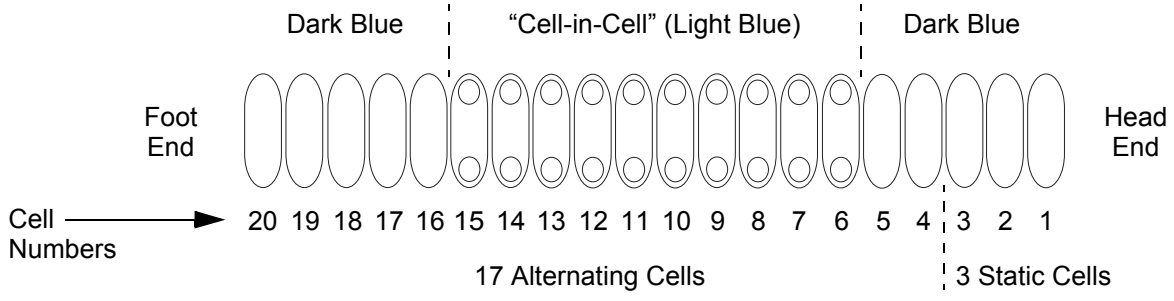

Dark Blue
"Cell-in-Cell" (Light Blue)
Dark Blue
Foot End
Head End
Cell Numbers
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
17 Alternating Cells
3 Static Cells

Figure 3 - Mattress Overlay Cell Numbering

To switch to transport mode, disconnect the tubeset from the pump. This will automatically seal the mattress so that air is not exhausted, and also allows cross-connection of the cells to create an even pressure in all the cells. To resume normal operation, reconnect the tubeset to the pump.

The mattress overlay is enclosed by a polyurethane-coated fabric cover. This cover has water-resistant, vapour permeable, and two-way stretch properties to assist with any repositioning requirements and enhance patient comfort, whilst protecting the mattress interior from contamination. It is simple to clean in situ, but can also be quickly unzipped and totally removed for cleaning. The zips are protected by flaps to prevent the ingress of contaminants. The base cover for the mattress overlay has four adjustable corner retention straps which slide under the corners of the base mattress.

To prevent any damage to the mains/power cable and to keep it tidy, the mains/power cable is placed under the cable management flap, which runs down the opposite side of the mattress overlay to the pump tubeset and CPR unit, and is secured by pop studs.

Auto Logic 200 Mattress Replacement (Refer to Figure 2)

The mattress replacement comprises a mattress overlay on top of a mattress base pad. The mattress overlay is similar to the **Auto Logic 110 Mattress Overlay**, but has two extra zips to secure the mattress base pad to it. There is also a pneumatic connection between the mattress overlay and the mattress base pad. The base pad has eight adjustable straps on the underside to attach it to the bed frame.

The mattress base pad comprises a main body zone and a perimeter cell zone. Both zones are fed directly from the air supply in the mattress overlay and are kept at a constant pressure: the main body zone will be at the same static pressure as the head cells in the mattress overlay and the perimeter cell zone will be at the higher static pressure of the cell-in-cells in the mattress overlay.

The air in the mattress base pad is evacuated via the CPR unit in the mattress overlay, should a cardiac arrest occur.

The mattress base pad also has a cable management flap, which runs down the opposite side of the mattress base pad to the pump tubeset and CPR unit, and is secured by pop studs.

Aura Logic Seat Cushion (Refer to Figure 4)

The seat cushion comprises 7 alternating cells, which are connected to the pump via a 2-way tubeset (there is no static feed in the seat cushion). The 7 cells are manufactured as a single welded assembly, which is enclosed by a zipped cover. The base cover has two fixing straps to attach it to the chair.

To switch to transport mode, disconnect the tubeset from the pump. This will automatically seal the seat cushion so that air is not exhausted, and also allow cross-connection of the alternating cells to create an even pressure in all the cells. To resume normal operation, reconnect the tubeset to the pump.

There are two small dump valves on the underside of the base cover which are used to release the air inside the seat cushion in an emergency or for storage.

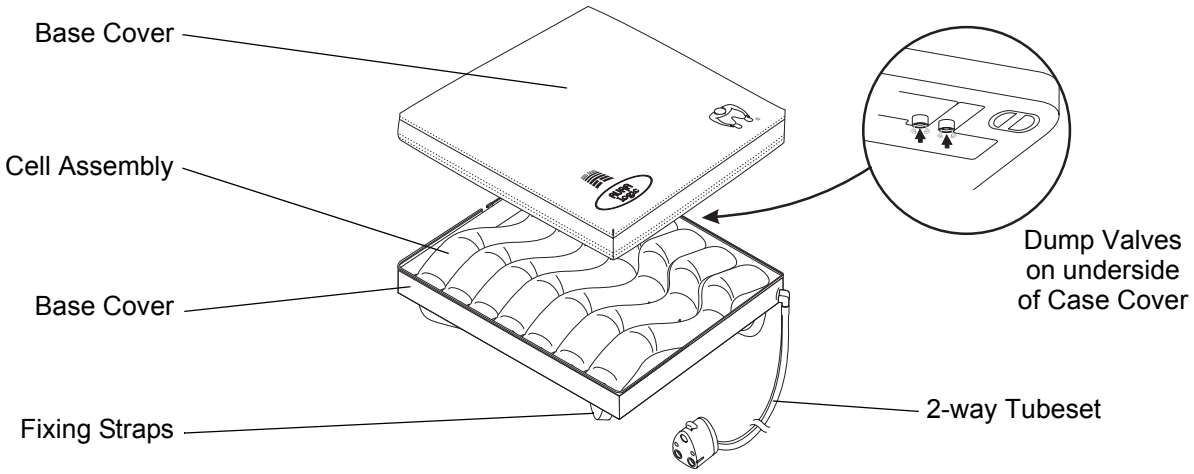


Figure 4 - Seat Cushion

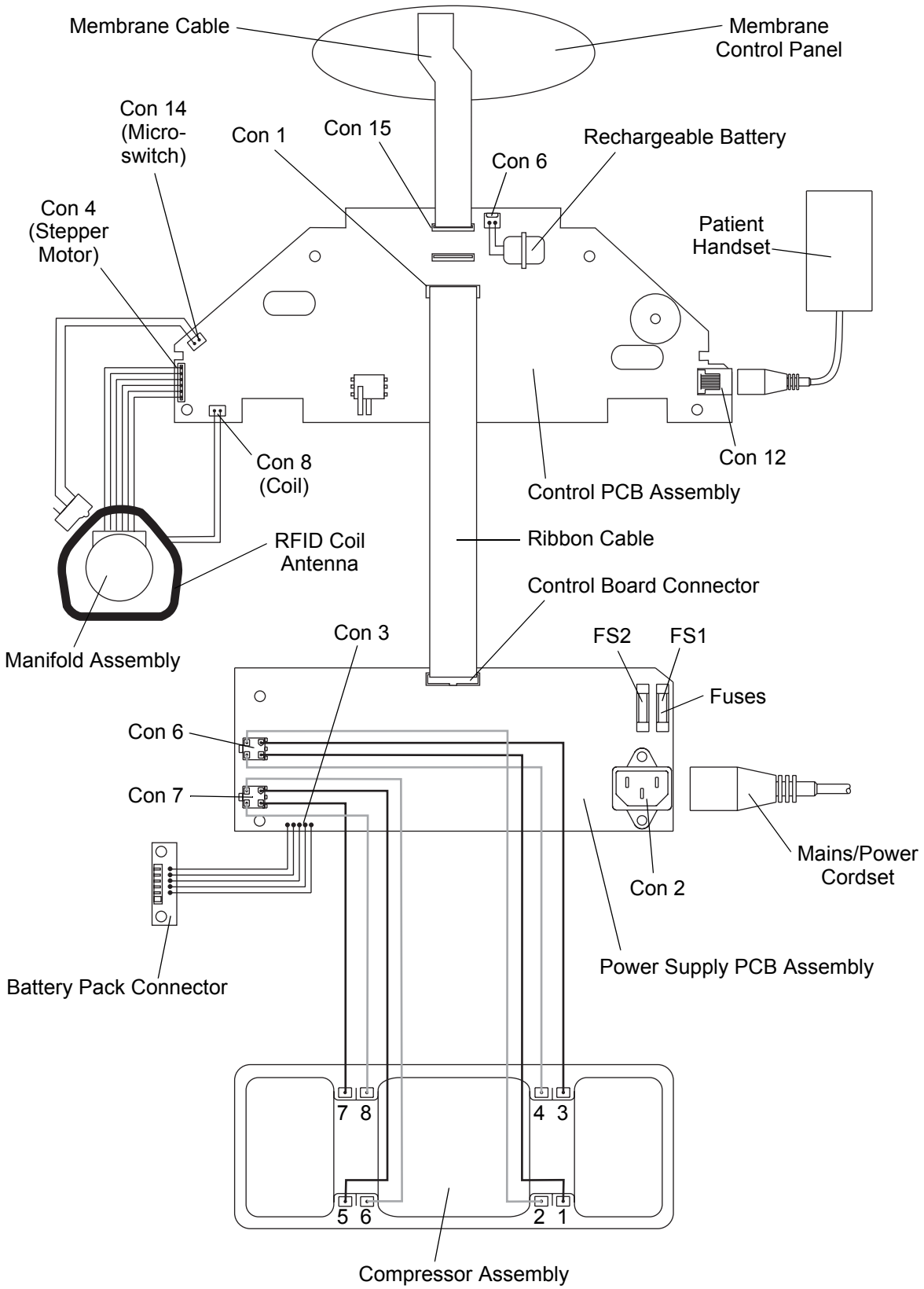


Figure 5 - Electrical Circuit Diagram

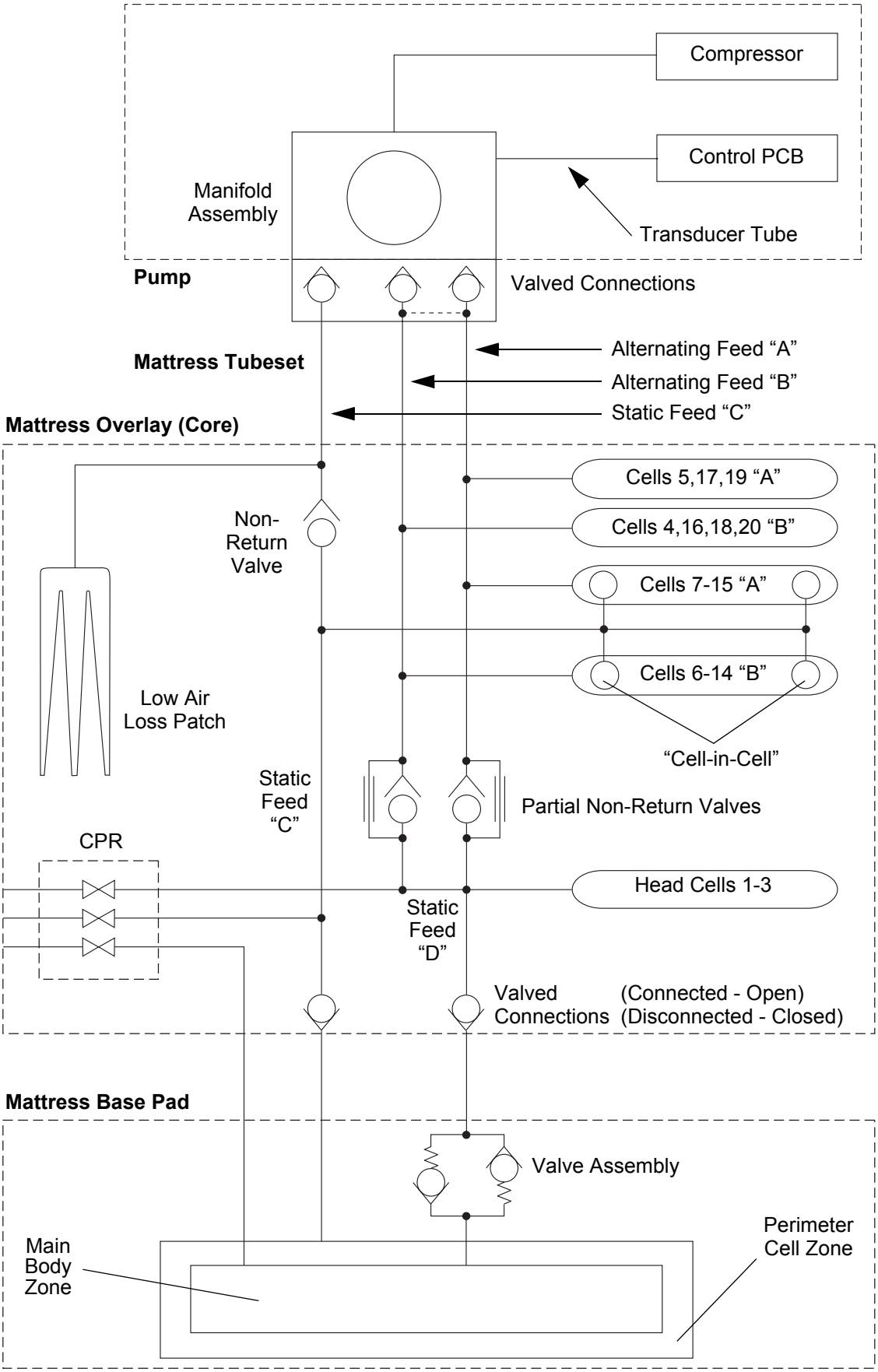


Figure 6 - Pneumatic Schematic for Pump and Mattress

3 Operating Principle

Pump

Refer to Figure 5 for the Electrical Schematic for the Pump.

Refer to Figure 6 for the Pneumatic Schematic for the Pump and Mattress.

Refer to Figure 9 for the Pneumatic Schematic for the Pump and Seat Cushion.

A single compressor in the pump provides a flow of air to the pneumatic system. The output of the compressor is fed to the manifold assembly, which also incorporates the rotary valve assembly. The rotary valve assembly channels air to different groups of cells in the mattress.

A tube from the manifold assembly is connected to a pressure transducer on the control printed circuit board (PCB). This provides the monitoring system with the means of accurately measuring the pressure of the air supply to the mattress.

The control PCB controls the compressor, the motor and manifold assembly, and the control panel on the top of the pump. It also performs a continuous check of the operation and performance of the pneumatic circuit. In the event of a detected fault, the electronic monitoring system generates both visual and audible alarms. The real time clock on the control PCB holds the time and date information.

The power supply PCB, in addition to generating the DC voltages for use in the pump, provides interfaces to the compressor and the optional battery pack.

There are three outputs from the manifold assembly to the tubeset connections (to the mattress):

- Alternating air feed “A”.
- Alternating air feed “B”.
- Static air feed “C”.

The distribution of air by the rotary valve in the manifold assembly is shown in Figure 7. The cells “A” and “B” in the mattress overlay core are inflated and deflated in a cycle period of ten minutes, as follows:

- Alternating 1: the “A” cells are inflated and the “B” cells are deflated.
- Static 2: brief crossover period where both “A” and “B” cells are inflated.
- Alternating 3: the “A” cells are deflated and the “B” cells are inflated.
- Static 4: pressure optimization cycle.
- Throughout the whole cycle (1-4) the static feed “C” is constant.

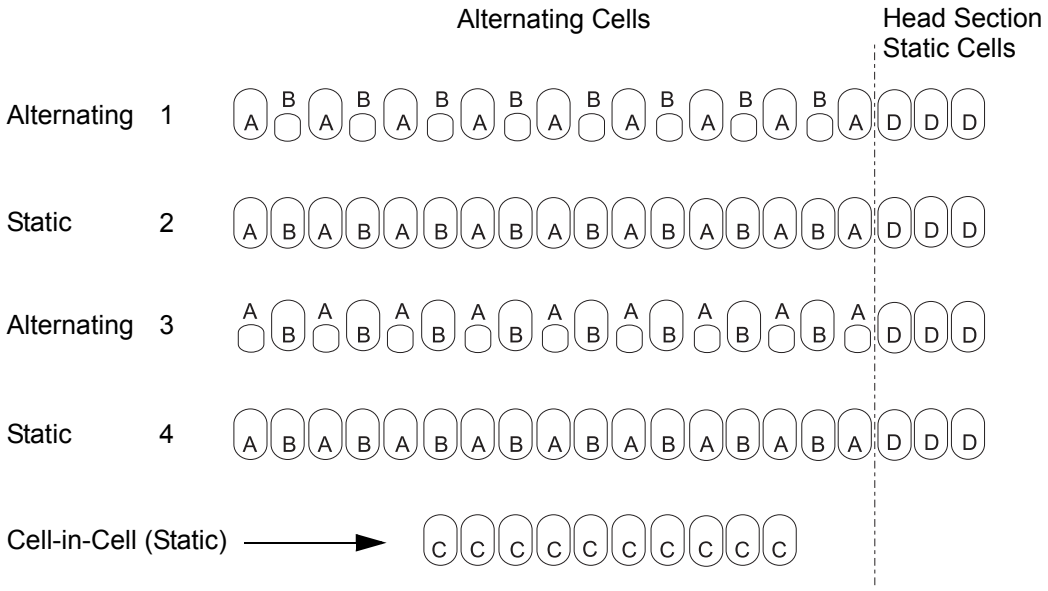


Figure 7 - Mattress Overlay Cell Inflation Cycle

Alarms and Indicators (Refer to Figure 8)

The yellow **Wait** indicator is illuminated when the mattress/seat is being inflated. The indicator will remain illuminated until the mattress/seat has been fully inflated.

The red **Low Pressure** indicator is illuminated whenever the pump detects low pressure within the mattress/seat. An audible alarm will sound unless cancelled by the **Mute** button. The indicator will extinguish once normal pressure is reached.

The yellow **Battery Low** indicator will illuminate two hours before battery failure. One hour before battery failure, the pump will default to **CLP (Constant Low Pressure)** mode, an audible alarm will sound and the yellow indicator will flash.

The **Power Fail** indicator will illuminate when a mains power failure has been detected and no battery backup is available. An audible alarm will sound until power is resumed or the pump is switched off using the run/standby button.

The yellow **Service** indicator will illuminate and remain on after a set number of running hours. This indicates that the pump is due for a service. The pump will continue to function normally even when the service indicator is illuminated. If the yellow **Service** indicator flashes, the pump has detected an internal fault.

During an alarm condition (except **Power Fail**), the sound of the alarm can be muted by pressing the **Alarm Mute** button. The yellow indicator will then remain on but the alarms will be muted for 15 minutes or until the alarm condition has been corrected.

Replacement Sub-Assembly Calibration

The main replaceable sub-assemblies in the pump are:

- Manifold assembly.
- Compressor assembly.
- Control PCB assembly.
- Power supply PCB assembly.

These replacement sub-assemblies are factory-calibrated, and do not require any further calibration after they have been installed in the pump.

Pressure Transducer Calibration

The pump utilizes a precise and accurate pressure measurement and control system. It is factory-calibrated, and is not expected to require re-calibration until after several years of continuous use. The measurement system automatically handles any adverse effects due to drift or temperature change and should not require any user intervention.

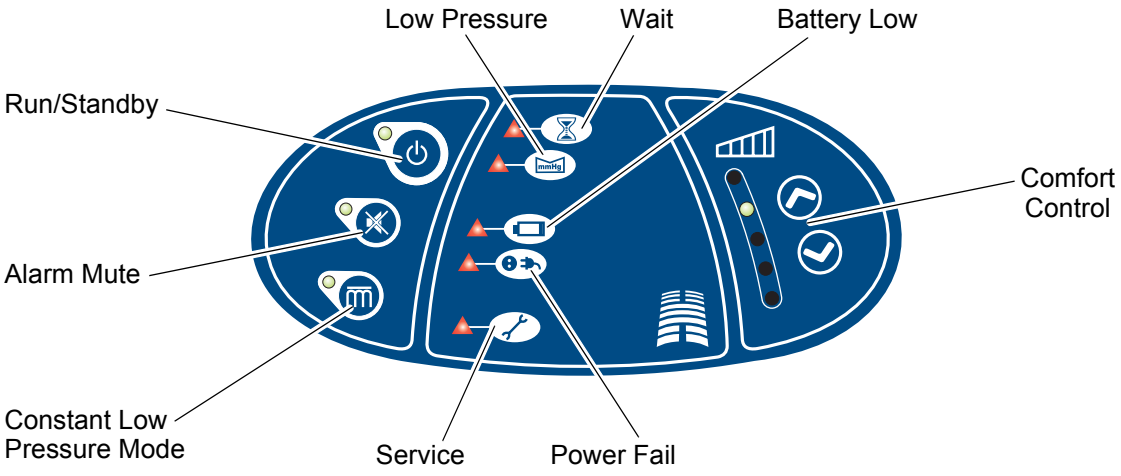


Figure 8 - Pump Control Panel

Battery on the Control PCB Assembly

The battery on the control PCB assembly provides power for the real time clock. The battery should not require replacement until after several years of continuous use. When the old battery is removed, the real time clock will lose its time and date settings, which can only be reloaded from a PC-based service tool, so the procedure should only be carried out in a Huntleigh service environment.

Mattress Overlay Core

Refer to Figure 6 for the Pneumatic Schematic for the Pump and Mattress.

The alternating feeds “A” and “B” supply air to the 17 alternating cells in the mattress overlay core. At the end of each ten minute cycle, the pump performs a pressure optimization cycle to automatically sense and adjust the air pressure of feeds “A” and “B” according to the weight of the patient. The comfort control on the pump control panel is used to make adjustments to the automatically calculated air pressure.

The three head cells are supplied from a static feed “D”, which is generated by two partial non-return valves from the alternating feeds “A” and “B”. The partial non-return valves allow the air in the head cells to slowly bleed away so that they are never at the maximum “A” / “B” pressure.

The two cell-in-cells in each of the 10 cells in the centre of the mattress are supplied from the pump static feed “C” via a non-return valve. The static feed “C” also supplies the low air loss patch under the cells.

Mattress Base Pad

Refer to Figure 6 for the Pneumatic Schematic for the Pump and Mattress.

There are three pneumatic connections between the mattress overlay core and the mattress base pad:

- Static air feed “C” from the static cell-in-cell line in the mattress overlay core.
- Static air feed “D” from the static head cell line in the mattress overlay core.
- Emergency air evacuation from the main body zone in the mattress base pad to the CPR in the mattress overlay core.

The static air feed “C” supplies the outer perimeter cell zone in the mattress base pad.

The static air feed “D” supplies the inner main body zone on the mattress base pad via a valve assembly, which comprises two valves within a single valve body. One valve in the valve assembly has a 5 mmHg crack pressure into the main body zone (from the mattress overlay to the mattress base pad), and the other valve has a 30 mmHg crack pressure away from it (from the mattress base pad to the mattress overlay).

During normal operation, the main body zone is inflated from the mattress overlay core via the 5 mmHg crack pressure side of the valve assembly. This keeps the mattress base pad very firm, since there is only a 5 mmHg pressure drop from the static head cell line. But if the pump or mattress overlay fails, and the pressure in the mattress overlay core reduces to zero, the pressure in the main body zone of the mattress base pad will bleed off via the 30 mmHg crack pressure side of the valve assembly to leave the main body zone at just 30 mmHg pressure for the patient to lie on more comfortably.

The pneumatic connections between the mattress overlay core and the mattress base pad are valved on the air feed “C” and “D” lines, so that the mattress overlay core is automatically sealed when the overlay and base pad are separated.

There are three outlets on the CPR assembly. When the CPR is operated on the mattress overlay, the air is evacuated from the mattress as follows:

- Outlet 1 evacuates the static air feed “C” from the static cell-in-cell line in the mattress overlay core and from the perimeter cell zone in the mattress base pad.
- Outlet 2 evacuates the static air feed “D” from the static head cell line and the alternating cells in the mattress overlay core.
- Outlet 3 evacuates the air from the main body zone in the mattress base pad. This is to bypass the valve assembly in the static air feed “D” line into main body zone of the mattress base pad.

Seat Cushion

Refer to Figure 9 for the Pneumatic Schematic for the Pump and Seat Cushion.

The seven cells in the seat cushion are connected to the two alternating feeds “A” and “B” from the pump via a 2-way tubeset. The seat cushion has no static cells, so the static feed from the pump is blanked off inside the seat tubeset connector. The seven cells are not discrete, individually-replaceable cells but are a one-piece manufactured item and can only be replaced as a single cell assembly.

There are four short manifolds welded into the base sheet assembly, two at each end of the cells. Cells 1, 3, 5 and 7 are connected to one pair of manifolds and cells 2, 4 and 6 are connected to the other pair. On one side of the mattress, the two manifolds are connected via the seat tubeset to the two alternating feeds “A” and “B” from the pump. The two manifolds at the opposite end of the cells are to equalise the pressures in alternate cells.

There are two small dump valves on the underside of the base cover (Refer to Figure 4) which are used to release the air inside the seat cushion in an emergency or for storage. These are connected to the two manifolds adjacent to the seat tubeset. The dump valves are depressed manually to release the air.

The seat cushion tubeset can be connected to and recognised by any pump in the **Logic** range.

Auto-Recognition System

When the tubeset connector on the end of the mattress overlay or seat cushion is connected to the pump, the pump automatically recognises which system has been connected, and adjusts the pump output pressures accordingly.

The auto-recognition system is short-range radio-based technology, comprising the following:

- A programmable device located in the tubeset connector on the mattress overlay and seat cushion.
- An RFID (Radio Frequency Identification) coil antenna located on the pump manifold assembly.

System Start Up Sequence (Refer to Figure 8)

3.1 When the pump is switched on at the mains/power supply or a battery pack is connected, a Built-In Self-Test (BIST) routine will run. The BIST routine is as follows:

3.1.1 The **green** indicator on the front of the pump will illuminate.

3.1.2 After approximately one second, the **green** indicator on the front of the pump will extinguish, and the sounder will “beep”.

3.1.3 All the indicators on the pump control panel and the front case will remain extinguished.

3.1.4 The sounder will “beep” at the end of the successful BIST routine (after approximately 20 seconds).

3.1.5 If the **Run/Standby** button is pressed during the BIST routine, the **Run/Standby** indicator will illuminate immediately, and at the end of the BIST routine the pump will go into **Run** mode (Refer to Para 3.2). Otherwise the pump will go into **Standby** mode.

3.2 At the end of the BIST routine, if the pump is not already in the **Run** mode, press the **Run/ Standby** button on the pump control panel to start the **Run** sequence, as follows:

3.2.1 The **green** indicator on the front case and the **Wait** and **Comfort** indicators on the pump control panel will illuminate immediately.

3.2.2 The **Run/Standby** indicator will quickly flash on - off - on, and then remain illuminated.

3.3 Allow approximately 7 minutes for the mattress overlay, 15 minutes for the mattress replacement or 3 minutes for the seat cushion to inflate fully.

3.4 The amber **Wait** indicator will go off once the mattress/seat is fully inflated.

3.5 Once a patient is on the mattress, the pump will automatically sense and adjust the pressure in the cells for the appropriate patient weight.

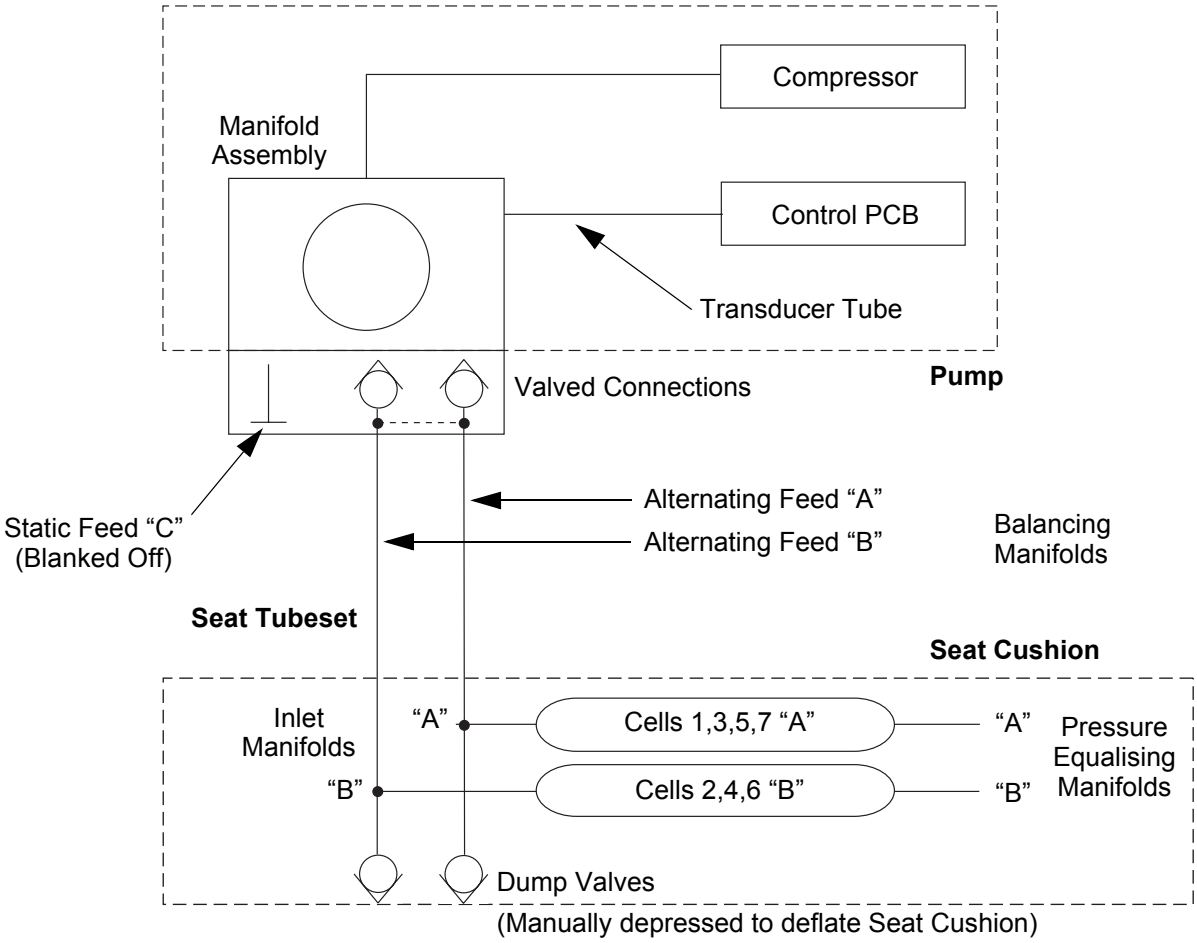


Figure 9 - Pneumatic Schematic for Pump and Seat Cushion

CHAPTER 2

TROUBLESHOOTING

1 Controls, Alarms and Indicators (Refer to Figure 10)

The pump features an audible and visual alarm. If a problem occurs, the system will:

1.1 Sense the fault.

1.2 Illuminate the relevant LED indicator on the control panel on top of the pump, and illuminate the red LED indicator on the front of the pump.

1.3 Sound an audible alarm.

During an alarm condition (except **Power Fail**), the sound of the alarm can be muted by pressing the **Alarm Mute** button on the pump control panel. The yellow **Alarm** indicator will remain on but the alarm will be muted for 15 minutes or until the alarm condition has been corrected (Refer to Figure 10).

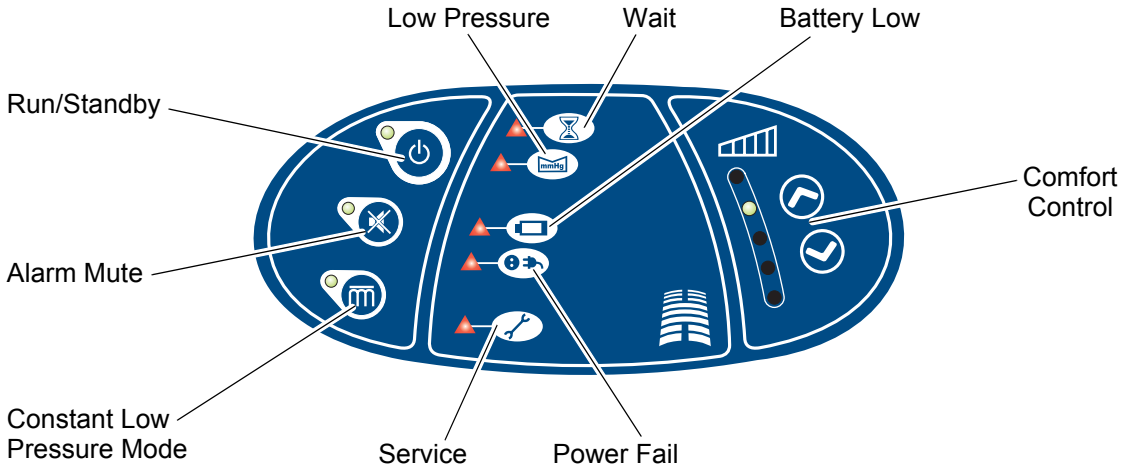


Figure 10 - Pump Control Panel

2 Diagnosing Faults

2.1 Faults in the system (i.e. pump, mattress overlay/replacement and/or seat cushion) can be diagnosed using the LED indicators on the pump control panel (Refer to Page 2, Section 3).

2.2 If the pump is connected to a computer, then the service engineer can read the Critical and Non-Critical Event Logs using the Communicator software to see if any problems or faults have occurred since the pump had its last service (Refer to Page 4, Section 4).

2.3 If the pump can ***not*** be connected to a computer, pump faults can still be diagnosed using the pump BIST routine. The service engineer can remove the rear case from the pump and run the BIST routine, and then diagnose pump faults by listening to and observing the operation of the sub-assemblies inside the pump (Refer to Page 9, Section 6).

2.4 Faults in the intelligent battery pack can be diagnosed using the LED indicators on the top of the battery pack (Refer to Page 11, Section 7).

3 Diagnosing Faults using a Troubleshooting Table

The following table (Refer to Table 1) contains fault symptoms, their possible causes and suggests steps to rectify the problem. Where possible, reference is made to the relevant repair chapter.

Refer to Page 1, Section 1 for details of the controls, alarms and indicators on the pump.

Table 1 - Troubleshooting Table

Fault	Possible Cause		Remedy
Low Pressure Alarm	**Pump**	Compressor assembly failure or output low.	Replace compressor. (Chapter 5, Page 21, Section 21)
		Manifold assembly faulty.	Replace manifold assembly. (Chapter 5, Page 9, Section 11) (Chapter 5, Page 9, Section 12)
		Kinked tube to the transducer on the control PCB assembly.	Check transducer tube for kinks or obstructions.
		Blocked air filters on the rear case and compressor assembly.	Replace both air filters. (Chapter 5, Page 3, Section 5) (Chapter 5, Page 3, Section 6) (Chapter 5, Page 29, Section 31)
		Damaged/disconnected internal tubes.	Check internal tubes and replace if necessary.
		External O-rings on manifold assembly damaged/missing.	Replace O-rings. (Chapter 5, Page 15, Section 16)
	Mattress Overlay	Leak in cell assembly.	Trace and replace the faulty cell. (Chapter 6, Page 5, Section 4) (Chapter 6, Page 7, Section 5)
		CPR not closed properly.	Reset the CPR.
		Leak in CPR assembly.	Replace CPR assembly. (Chapter 6, Page 18, Section 15) (Chapter 6, Page 18, Section 16)
		Leak in manifolds.	Replace manifold. (Chapter 6, Page 9, Section 6) (Chapter 6, Page 9, Section 7)
		Leak in non-return valves.	Replace non-return valves. (Chapter 6, Page 11, Section 8)
		Damaged tubeset assembly or pump connector.	Replace tubeset assembly. (Chapter 6, Page 17, Section 13) (Chapter 6, Page 17, Section 14)
	Mattress Base Pad	Damaged manifold connector assembly.	Replace manifold connector assy. (Chapter 7, Page 3, Section 2) (Chapter 7, Page 3, Section 3)
		Leak in base pad sub-assembly.	Replace base pad sub-assembly. (Chapter 7, Page 5, Section 7)

Table 1 - Troubleshooting Table

Fault	Possible Cause		Remedy
Low Pressure Alarm (cont.)	**Seat Cushion**	Leak in welded cell assembly.	Replace welded cell assembly. (Chapter 8, Page 3, Section 4) (Chapter 8, Page 3, Section 5)
		Leak in base assembly manifolds.	Replace base assembly. (Chapter 8, Page 6, Section 10)
		Leak in dump valves in base assembly.	Replace base assembly. (Chapter 8, Page 6, Section 10)
		Damaged tubeset assembly or pump connector.	Replace tubeset assembly. (Chapter 8, Page 4, Section 6) (Chapter 8, Page 4, Section 7)
Service LED (Flashing)	**Pump**	Bad cable connection between control and power supply PCBs.	Check cable connection between control and power supply PCBs.
		Control PCB assembly faulty.	Replace control PCB assembly. (Chapter 5, Page 25, Section 24) (Chapter 5, Page 25, Section 25)
		Power supply PCB assembly faulty.	Replace power supply PCB assy. (Chapter 5, Page 23, Section 22) (Chapter 5, Page 23, Section 23)
		RFID coil antenna faulty.	Replace RFID coil antenna. (Chapter 5, Page 13, Section 13)
		Manifold assembly faulty.	Replace manifold assembly. (Chapter 5, Page 9, Section 11) (Chapter 5, Page 9, Section 12)
		Compressor assembly faulty.	Replace compressor assembly. (Chapter 5, Page 21, Section 21)
Service LED (Solid) [a]	**Pump**	Service period has expired.	Carry out service on pump. (Chapter 3, Page 1, Section 1)
		3 or more Self Set Technology (SST) errors have been detected on the pump.	Check for SST errors. (Chapter 2, Page 6, Section 5)

a. If the service period has NOT expired, then the cause of the **Service LED (Solid)** fault will be due to the pump detecting three or more Self Set Technology (SST) errors.

4 Diagnosing Faults using the Event Logs on the Communicator Software

4.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

4.2 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Chapter 4 “Testing”, Page 5, Section 5).

4.3 Run the Communicator software on the PC (Refer to Chapter 4 “Testing”, Page 6, Section 6).

4.4 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where “**XX**” is the version number, and must be “**02**” or higher.

4.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

4.6 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 11).

4.7 To connect the mains/power supply to the pump, do the following:

4.7.1 If the Serial Communications Pack is being used:

4.7.1.1 Plug in and switch on the mains/power supply to the pump.

4.7.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Chapter 4 “Testing”, Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

4.7.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Chapter 4 “Testing”, Page 12, Section 8).

4.8 When the pump is in **Standby**, click on the **Event Log** tab on the Communicator Software (Refer to Figure 11).

4.9 Make sure that **Non Critical** is selected in the bottom left of the display.

4.10 Click **Clear table**. This clears the entries displayed by the Communicator software.

Note: *It does not clear the entries in the pump itself.*

4.11 In the bottom centre of the screen, use the up and down arrows to select the number of events to display: 1, 10, 20, 30, 40, 50 and so on.

4.12 Click **Read**, and the selected number of events will be displayed.

4.13 Check the **Event Log** entries for any system faults.

4.14 Typical entries in the **Non Critical Event Log** include:

- **SST Errors**

4.15 Click **Clear Table** to delete the **Event Log** entries.

4.16 Click **Critical** in the bottom left of the display

4.17 Repeat steps Para 4.10 to Para 4.13, above.

4.18 Typical entries in the **Critical Event Log** include:

- **Stepper Failed**
- **RFID Failed**

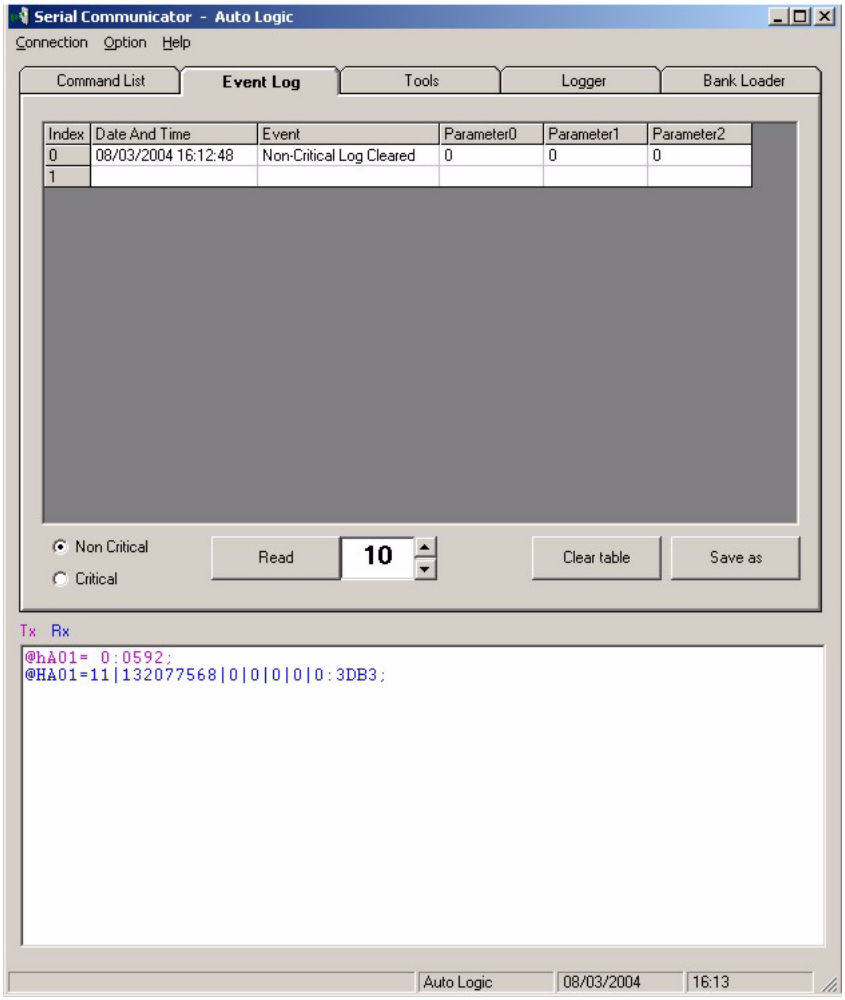


Figure 11 - Communicator Software - Event Log

5 Checking for Self Set Technology (SST) Errors

The **Auto Logic** systems do not have a pressure sensor pad in the mattress. Instead, the pump incorporates Self Set Technology (SST), which adjusts the air pressure within the mattress every 10 minutes in **Alternating** mode and 20 minutes in **Constant Low Pressure (CLP)** mode to suit the Body Mass Index (BMI) and position of the patient.

If there are three SST-related errors on consecutive SST cycles, the yellow **Service** indicator will be permanently illuminated (not flashing) and the **Event Log** on the Communicator software will be updated. The audible alarm will not sound. The **Service** indicator will remain permanently illuminated (even during **Standby**) until there have been 30 error-free SST cycles, after which time the **Service** indicator will be extinguished. Each SST cycle in **Alternating** mode is 10 minutes, so the 30 error-free SST cycles will indicate that approximately five hours of error-free operation have been completed.

If the **Service** indicator is permanently illuminated (not flashing), then there are two possible conditions:

- The pump has detected three SST-related errors on consecutive SST cycles (as detailed above).
- The pump is due for a routine service.

Carry out the following procedure to check whether SST-related alarms have occurred.

5.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

5.2 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Chapter 4 “Testing”, Page 5, Section 5).

5.3 Run the Communicator software on the PC (Refer to Chapter 4 “Testing”, Page 6, Section 6).

5.4 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where “**XX**” is the version number, and must be “**02**” or higher.

5.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

5.6 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 11).

5.7 To connect the mains/power supply to the pump, do the following:

5.7.1 If the Serial Communications Pack is being used:

5.7.1.1 Plug in and switch on the mains/power supply to the pump.

5.7.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Chapter 4 “Testing”, Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

5.7.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Chapter 4 “Testing”, Page 12, Section 8).

Checking if the Pump is due for a Routine Service

5.8 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **SERVICE** (Refer to Chapter 4 “Testing”, Page 10, Section 7).

5.9 Send the command **201 - Read_Service_Hours**. Check the **hours** value displayed in the **Receive** part of the dialog box:

5.9.1 If the **hours** value is zero (i.e. **201 = 0 hours**), then the pump is due for routine service (Refer to Chapter 3 “Maintenance”, Page 1, Section 1).

5.9.2 If the **hours** value is greater than zero (e.g. **201 = 8000 hours**), then the pump has detected three SST-related errors on consecutive SST cycles. Continue this test procedure at Para 5.10, below.

Checking for SST Errors

Note: *If there have been three SST-related errors on consecutive SST cycles, the fault condition will not be cleared until there have been 30 error-free SST cycles. When the fault condition is initially detected, a count of **30** is set up and decremented by one every time an "error-free SST cycle" has been completed.*

5.10 Send the command **207 - Read_SST_Errors**. The value received from the pump is the "error-free SST cycle" count, which will be a value between **0** and **30**:

- A value of **0** indicates the fault has now been cleared.
- A value between **1** and **30** indicates that no "error-free SST cycles" have occurred, and the fault is not cleared.

5.11 Check the **Non Critical Event Log** to see when the SST errors occurred (Refer to Page 4, Section 4).

5.12 Refer to Table 2 for the **Non Critical Event Log** entries for SST errors.

5.13 To reset the SST error count on the pump, do the following:

5.13.1 Send the command **703 - Enable_Test_Mode**, to put the pump into test mode.

5.13.2 Send the command **208 - Reset_SST_Errors**, to reset the SST error count.

5.14 Switch off the mains/power supply to the pump.

Table 2 - Non Critical Event Log - SST Errors

Event Code	Parameter 0	Parameter 1	Parameter 2	Name
23	04	N/A	N/A	Poor Tau
23	09	N/A	N/A	Poor Curve Fit
45	N/A	N/A	N/A	Floating Point Error

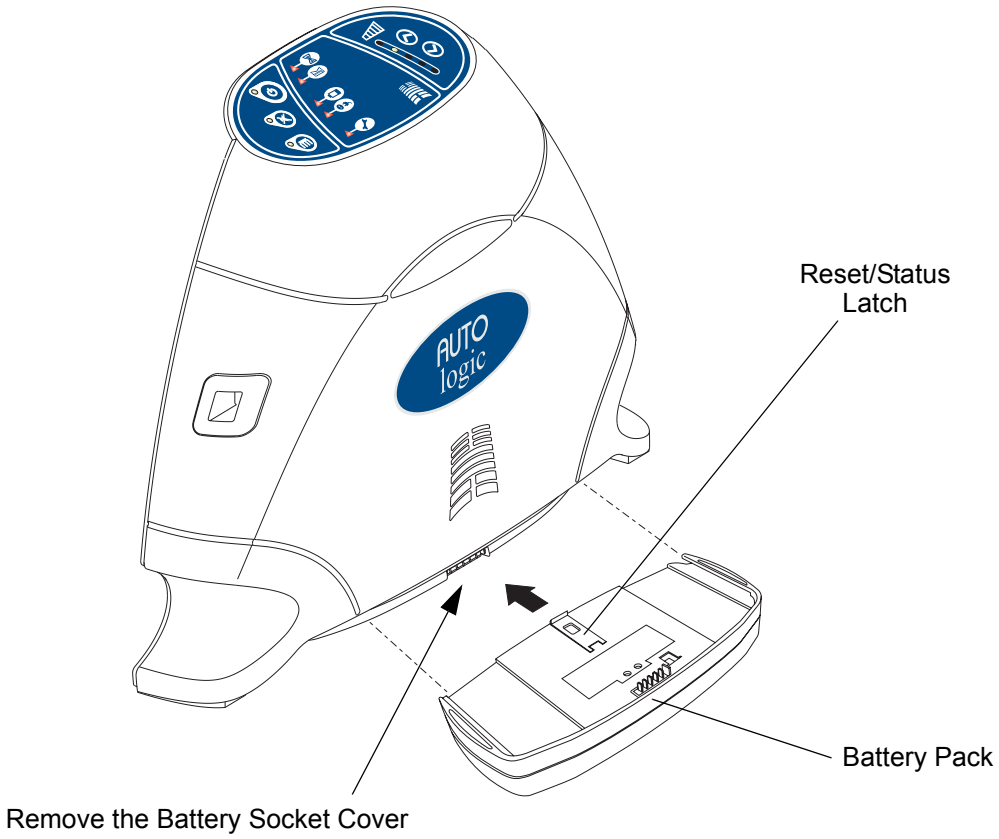


Figure 12 - Installing the Battery Pack

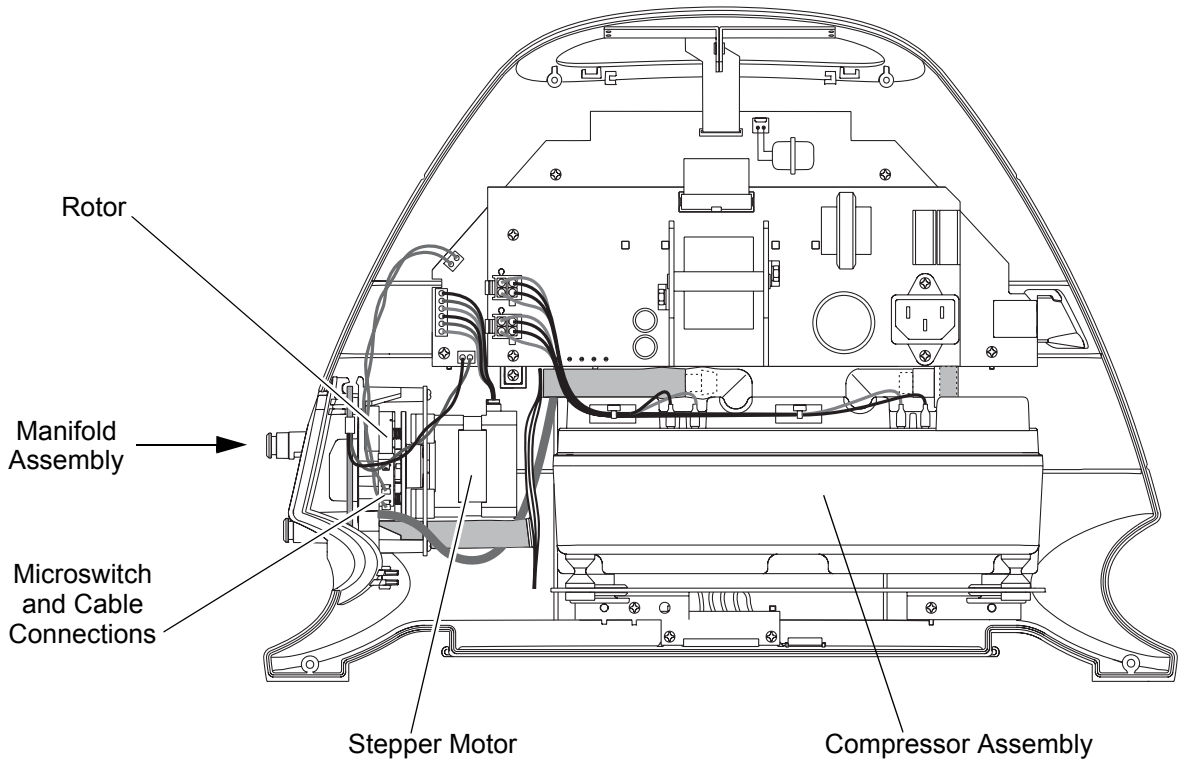


Figure 13 - Checking the Pump Sub-Assemblies during the BIST Routine

6 Diagnosing Pump Faults using the Built-In Self-Test Routine with no PC

WARNING: ONLY THE BATTERY PACK SHOULD BE USED TO POWER THE PUMP WHEN THE REAR CASE IS REMOVED. IF MAINS/POWER IS APPLIED TO THE PUMP WITH THE REAR CASE REMOVED, VOLTAGES IN EXCESS OF 230 VOLTS RMS / 400 VOLTS DC ARE PRESENT ON THE POWER SUPPLY PCB ASSEMBLY AND CAN, IN CERTAIN CIRCUMSTANCES, BE LETHAL.

6.1 Whenever the pump is switched on at the mains/power supply or a battery pack is connected, a Built-In Self-Test (BIST) routine will run. The ***successful*** BIST routine is as follows:

6.1.1 The **green** indicator on the front of the pump will illuminate.

6.1.2 After approximately one second, the **green** indicator on the front of the pump will extinguish, and the sounder will “beep”.

6.1.3 All the indicators on the pump control panel and the front case will remain extinguished.

6.1.4 After approximately 20 seconds, the sounder will “beep” at the end of the successful BIST routine, and the pump will go into **Standby** mode.

6.2 When the pump fails the BIST routine, the service engineer can remove the rear case from the pump, and then re-run the BIST routine using the battery pack, and diagnose pump faults by listening to and observing the operation of the sub-assemblies inside the pump.

6.3 Remove the rear case from the pump (Refer to Chapter 5 “Pump Repair”, Page 5, Section 7).

6.4 Lay the pump down with the internal sub-assemblies facing upwards.

6.5 To re-run the BIST routine, install a battery pack onto the pump, as follows (Refer to Figure 12):

6.5.1 Make sure the battery pack is not discharged.

6.5.2 Remove the battery socket cover from the base of the pump.

6.5.3 From the front of the pump, slide the battery pack over the guides on the base of the pump, and click into place.

Note: *Make sure the pump sub-assemblies are still facing upwards.*

6.5.4 As soon as the battery pack clicks into place, the BIST routine will start.

6.6 When the BIST routine has failed, it can be re-started by either of the following:

6.6.1 Pressing the **Run/Standby** button (Refer to Figure 10).

6.6.2 Removing and re-installing the battery pack onto the pump.

6.7 The ***successful*** BIST routine, with the rear case removed, is as follows (all times are approximate):

Note: *Refer to Figure 13 for the positions of the relevant pump sub-assemblies.*

6.7.1 The sounder will “beep” at the start of the BIST routine.

6.7.2 The rotor on the manifold assembly will turn for six seconds, and then stop briefly.

6.7.3 The rotor will then turn again for six seconds, and then stop again briefly.

6.7.4 The rotor will finally turn again for one second, and stop completely.

6.7.5 The compressor assembly will then run for two seconds and stop.

6.7.6 The rotor on the manifold assembly will then turn in the opposite direction for one second, and stop completely.

6.7.7 Finally, the sounder will “beep” to indicate the end of the successful BIST routine.

Note: *The successful BIST routine will be completed in approximately 20 seconds.*

6.8 If the BIST routine fails, then diagnose the possible pump faults as follows:

6.8.1 If the rotor on the manifold assembly does not turn (Refer to Paras 6.7.2 or 6.7.3), the stepper motor is faulty.

- Replace the manifold assembly (Chapter 5 “Pump Repair”, Page 9, Section 11 and Chapter 5 “Pump Repair”, Page 9, Section 12).

6.8.2 If the rotor turns continuously (Refer to Para 6.7.2), and does not stop turning, then the stepper motor cannot find sync because the microswitch or wiring is faulty. Check that the microswitch cable is securely connected to the control PCB assembly, and to the correct terminals on the manifold assembly microswitch (Refer to Chapter 5 “Pump Repair”, Page 9, Fig 36). If they are, the manifold assembly is faulty.

- Replace the manifold assembly (Chapter 5 “Pump Repair”, Page 9, Section 11 and Chapter 5 “Pump Repair”, Page 9, Section 12).

6.8.3 If the compressor assembly does not run for 2 seconds and stop (Refer to Para 6.7.5), three attempts will be made to run the compressor assembly when the manifold assembly is in the blocked tube position. After each attempt the stepper motor on the manifold assembly will move through sync and return. If three attempts were made to run the compressor assembly and the BIST routine fails, then there are four possible causes of failure:

6.8.3.1 The compressor assembly is not connected to the power supply PCB assembly.

- Check the wiring connections between the compressor assembly and the power supply PCB assembly.

6.8.3.2 The pressure transducer is out of calibration.

- Re-calibrate the pressure transducer (Chapter 4 “Testing”, Page 19, Section 12).

6.8.3.3 The pneumatic connections inside the pump are not correct.

- Check the pneumatic connections inside the pump.

6.8.3.4 The valve in the manifold assembly is in the wrong position. The manifold assembly is faulty.

- Replace the manifold assembly (Chapter 5 “Pump Repair”, Page 9, Section 11 and Chapter 5 “Pump Repair”, Page 9, Section 12).

6.8.4 If the compressor assembly runs once for a short period (Refer to Para 6.7.5) and the BIST routine still fails, the RFID (Radio Frequency Identification) coil antenna is faulty.

- Replace the RFID (Radio Frequency Identification) coil antenna (Chapter 5 “Pump Repair”, Page 13, Section 13).

6.8.5 Check that the sounder “beeps” at the start and end of the BIST routine. If it does not, the control PCB assembly is faulty.

- Replace the control PCB assembly (Chapter 5 “Pump Repair”, Page 25, Section 24 and Chapter 5 “Pump Repair”, Page 25, Section 25).

6.9 To remove the battery pack from the pump, do the following (Refer to Figure 12):

6.9.1 Depress the **Reset/Status Latch** at the rear of the pump/battery pack.

6.9.2 Slide the battery out from the base of the pump, towards the front of the pump.

6.9.3 Install the battery socket cover onto the base of the pump.

6.10 Install the rear case onto the pump (Refer to Chapter 5 “Pump Repair”, Page 5, Section 8).

7 Checking the Status and Diagnosing Faults on the Intelligent Battery Pack

General

The optional intelligent battery pack allows the pump to be used independently of the mains/power supply (Refer to Figure 14). The battery pack slides onto the base of the pump (Refer to Chapter 9 “Intelligent Battery Pack Assembly”).

The battery pack status label is on the top of the battery pack, and has two LED indicators to show the status of, and diagnose faults in, the battery pack (Refer to Figure 15).

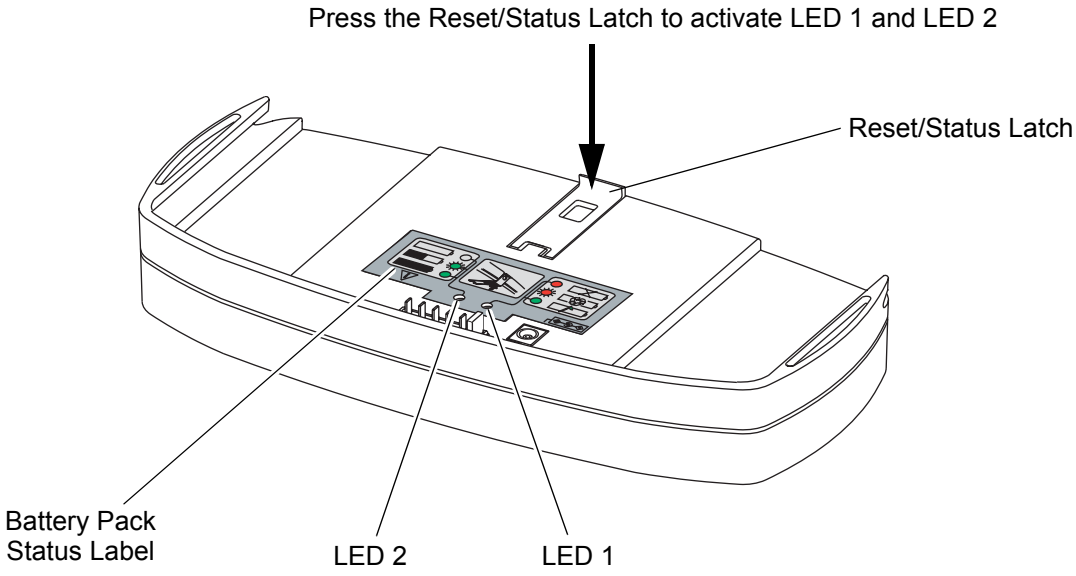


Figure 14 - Intelligent Battery Pack

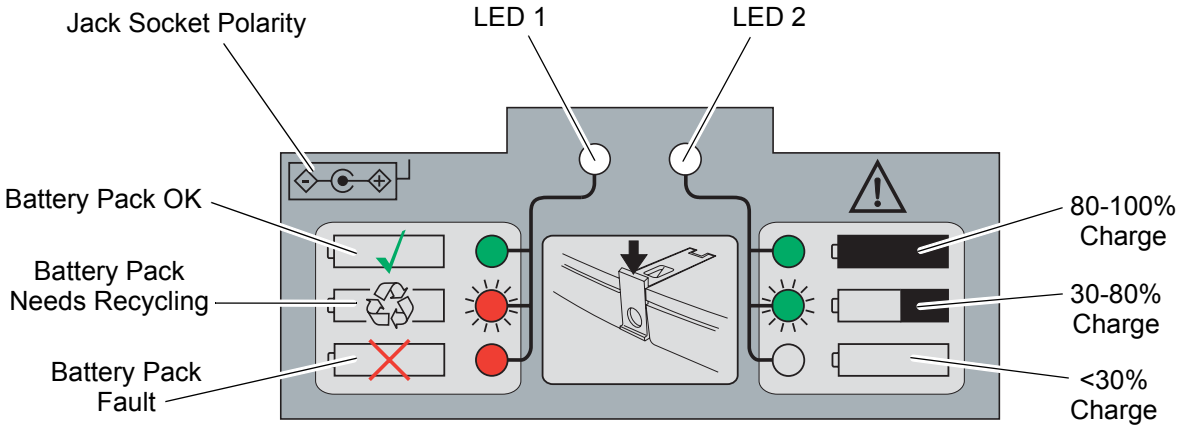


Figure 15 - Battery Pack Status Label

To Check the Battery Pack Status (Refer to Figures 14 and 15)

7.1 Remove the battery pack from the pump unit (Refer to Chapter 9 “Intelligent Battery Pack Assembly”, Page 1, Section 2).

7.2 Press the Reset/Status Latch, which will activate the two LEDs on the top of the battery pack.

7.2.1 If the battery pack is ***NOT*** on charge, the two LEDs will display one of the following conditions (Refer to Table 3):

Table 3 - Battery Pack Status - Battery NOT on Charge

LED 1	LED 2	Battery Pack Status
Green	Green	Battery pack is OK. It has >80% charge.
Green	Green	Battery pack is OK. It has between 30-80% charge.
Green		Battery pack is OK. It has <30% charge.
Red	Green	Battery pack needs recycling[(a)]. It has between 30-80% charge.
Red		Battery pack needs recycling[(a)]. It has <30% charge.
Red		Battery pack has an error.
		Battery pack is discharged or has an error. Try recharging.

a. Once the battery pack has entered the “recycling” mode it will never show that the battery pack is fully charged (Note: This does not indicate a fault condition).

7.2.2 If the battery pack is on charge, via the optional battery charger, the two LEDs will display one of the following conditions (Refer to Table 4):

Table 4 - Battery Pack Status - Battery on Charge

LED 1	LED 2	Battery Pack Status
Green	Green	Battery pack is OK. It is fully charged.
	Green	Battery pack is charging.
Red	Green	Battery pack needs recycling[(a)]. Battery pack is charging.
Red		Battery pack has an error. This could be a temporary fault due to adverse operating temperature.
		Battery pack has an error.

a. Once the battery pack has entered the “recycling” mode it will never show that the battery pack is fully charged (Note: This does not indicate a fault condition).

Battery Pack "Conditioning" Fault

When the battery pack is manufactured and tested, it has to be "conditioned" before it will operate correctly. To "condition" the battery pack, it must be fully discharged and recharged three times. During the "conditioning" process, **LED 1** will be illuminated **orange**, and will be extinguished as soon as the "conditioning" process has been completed correctly.

Note: *In normal system operation,* ***LED 1*** *should never be illuminated* ***orange****.*

Fault: If a battery pack has **LED 1** illuminated **orange** then the battery pack is faulty and must be returned to the Huntleigh Service Department.

Battery Pack Disposal

If the battery pack status indicates that it is faulty or needs recycling (Refer to Tables 3 and 4), then it should be returned to the Huntleigh Service Department to be recycled.

WARNING: DO NOT DISPOSE OF THE BATTERY PACK IN A DUSTBIN.

CHAPTER 3

MAINTENANCE

WARNING: BEFORE DISMANTLING THE PUMP UNIT, MAKE SURE THE UNIT HAS BEEN ISOLATED FROM THE MAINS/POWER SUPPLY BY REMOVING THE MAINS/POWER PLUG FROM THE WALL SOCKET.

WARNING: A POTENTIAL ELECTRICAL SHOCK HAZARD EXISTS ON THE POWER SUPPLY PCB ASSEMBLY WHEN THE PUMP CASE IS OPENED, EVEN WITH THE PUMP SWITCHED OFF.

CAUTION: Static Sensitive Devices. Electrostatic discharge can seriously damage the control and power supply PCB assemblies in the pump. This pump should only be opened by personnel trained in ESD methods and with appropriate equipment and anti-static protection.

1 Pump Service

The yellow **Service** indicator on the pump control panel will illuminate and remain on, after a preset number of running hours, to indicate that the pump is ready for a service. Typically, this service interval is set to 17,520 running hours (which equals two years).

To service the pump, do the following:

Note: *A computer must be used in order to set the service hours.*

1.1 Carry out the pump maintenance checks, detailed below (Refer to Page 2, Section 2).

1.2 Replace the following components:

1.2.1 Air inlet filter on the compressor assembly (Refer to Chapter 5 “Pump Repair”, Page 29, Section 31).

1.2.2 Inlet filter felt on the rear case (Refer to Chapter 5 “Pump Repair”, Page 3, Section 5 and Chapter 5 “Pump Repair”, Page 3, Section 6).

1.3 Check that the sounder and power fail LED indicators on the pump are operating (Refer to Chapter 4 “Testing”, Page 23, Section 14).

1.4 Check the pump pressures and free flows using a PC and the Communicator software (Refer to Chapter 4 “Testing”, Page 14, Section 10).

1.5 Check that the calibration of the pressure transducer is correct (Refer to Chapter 4 “Testing”, Page 17, Section 11).

1.6 Set the service hours back to 17520 (Refer to Chapter 4 “Testing”, Page 22, Section 13).

1.7 Carry out the electrical safety tests (Refer to Chapter 4 “Testing”, Page 28, Section 18).

1.8 Carry out the basic system operation test (Refer to Chapter 4 “Testing”, Page 2, Section 3).

2 Pump Maintenance Checks

2.1 Visually inspect the following for damage, wear and potential faults. If any parts are found to be damaged they must be replaced in accordance with Chapter 5 “Pump Repair”.

- Front and rear cases: Check for damage and security.
- Hooks: Check for damage and security.
- O-rings and outlet ports on the manifold assembly: Check for damage.
- Membrane control panel: Check for damage and security to case.
- Mains/power lead: Check for damage and security of plug
- Rubber feet (8 0ff): Check for security.
- Labels (2 off): Check all labels are present and legible

2.2 Remove the rear case (Refer to Chapter 5 “Pump Repair”, Page 5, Section 7) and visually inspect the following for damage, wear, security and potential faults:

- Series 6 compressor assembly, including anti-vibration mounts.
- Manifold assembly.
- Control PCB assembly, including rechargeable battery.
- Power supply PCB assembly, including fuses.
- Battery pack connector, including connector sealing strips.
- Ferrite magnet, secured to case adjacent to battery pack connector.
- Wiring.
- Internal Tubing.
- Screws, nuts and bolts.

3 Mattress Replacement and Mattress Overlay Service

To carry out a service on the mattress replacement or mattress overlay, do the following:

3.1 Carry out the mattress replacement and mattress overlay maintenance checks, detailed below (Refer to Page 3, Section 4).

3.2 Carry out an inflation test of the mattress replacement or mattress overlay (Refer to Chapter 4 “Testing”, Page 29, Section 19).

4 Mattress Replacement and Mattress Overlay Maintenance Checks

Visually inspect the following for damage, wear and potential faults. If any parts are found to be damaged they must be replaced in accordance with the following:

- Mattress Replacement: Refer to Chapter 6 “Mattress Overlay Repair” and Chapter 7 “Mattress Base Pad Repair”.
- Mattress Overlay: Refer to Chapter 6 “Mattress Overlay Repair”.

• Top cover:	Check for tears, staining, clarity of printed labels.
• Top cover zip:	Check zip runs freely, and condition of zip teeth.
• Cell assemblies:	Check for damage and security.
• Manifold and tubing, including non-return valves:	Check for damage and security.
• CPR assembly:	Check operation of the fast deflate mechanism.
• Pump tubeset assembly:	Check for damage and security of connection.
• Pneumatic connection between overlay (core) and base pad:	Check for damage and security of connection.
• Fixing straps:	Check condition and security.
• Base sheet assembly:	Check for broken/torn loops.
• Connectors:	Check for damage and security.
• Press studs:	Check for damage and security.

5 Seat Cushion Service

To carry out a service on the seat cushion, do the following:

5.1 Carry out the seat cushion maintenance checks, detailed below (Refer to Page 3, Section 6).

5.2 Carry out an inflation test of the seat cushion (Refer to Chapter 4 “Testing”, Page 29, Section 19).

6 Seat Cushion Maintenance Checks

Visually inspect the following for damage, wear and potential faults. If any parts are found to be damaged they must be replaced in accordance with Chapter 8 “Seat Cushion Repair”:

• Top cover:	Check for tears, staining, clarity of printed labels.
• Top cover zip:	Check zip runs freely, and condition of zip teeth.
• Welded cell assembly:	Check for damage and security.
• Base assembly, including manifolds:	Check for damage and security.
• Dump valves on base assembly:	Check operation of the fast deflate mechanism.
• Pump tubeset assembly:	Check for damage and security of connection.
• Fixing straps:	Check condition and security.
• Connectors:	Check for damage and security.

CHAPTER 4

TESTING

1 Pump Control Panel

Refer to Figure 16 for the layout of the buttons, alarms and indicators on the pump control panel.

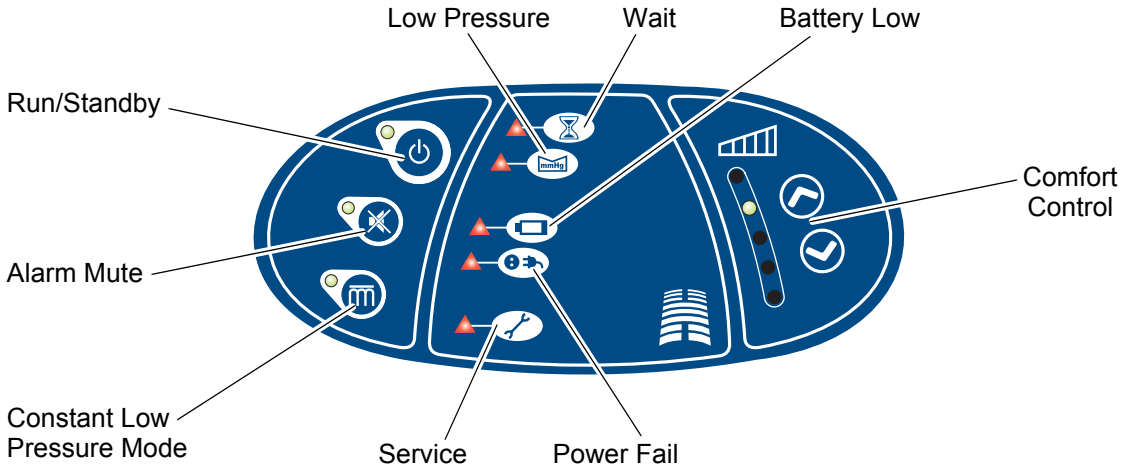


Figure 16 - Pump Control Panel

2 Test Equipment

2.1 To test/calibrate the pump unit correctly, the test equipment in Table 5 is required.

Note: *All test equipment must be calibrated to national or international standards.*

2.2 A tubeset connector must always connected to the pump. The pump will fail if it can not detect a mattress or seat cushion connected to it. The tubeset connector can be any of the following:

- The tubeset connected to an **Auto Logic** mattress replacement or overlay.
- The tubeset connected to an **Aura Logic** seat cushion.
- A 3-way pump tubeset adaptor (Table 5, Item 50).

Note: *The two batteries in the IR Interface Module (Table 5, Item 10) have a short life. To increase the life of the batteries, always switch off the IR Interface Module by disconnecting the 9-way D-type plug (on the end of the IR Interface Module cable) from the PC* ***when the testing is complete****.*

Table 5 - Pump Flow, Pressure and Function Test Equipment

Item	Test Equipment	Part Number
10	IR Interface Module	MIS216
20	Serial Communications Pack	507104
30	Laptop / Desktop PC running Microsoft® Windows	-
40	Flow / Pressure Rig, 3-26 ltr/min	PRE073
50	3-way Pump Tubeset Adaptor (Spares Item)	630105
60	Huntleigh Communicator Software, Version **02** or higher	SERS001-**02**

3 Checking the Basic System Operation

3.1 Connect the pump to an **Auto Logic** mattress replacement or overlay, or **Aura Logic** seat cushion.

3.2 Plug in and switch on the mains/power supply to the pump.

3.3 A Built-In Self-Test (BIST) routine will run on the pump when the mains/power is applied or a battery pack is connected. The BIST routine is as follows (Refer to Figure 16):

3.3.1 The **green** indicator on the front of the pump will illuminate.

3.3.2 After approximately one second, the **green** indicator on the front of the pump will extinguish, and the sounder will “beep”.

3.3.3 All the indicators on the pump control panel and the front case will remain extinguished.

3.3.4 The sounder will “beep” at the end of the successful BIST routine (after approximately 20 seconds).

3.3.5 If the **Run/Standby** button is pressed during the BIST routine, the **Run/Standby** indicator will illuminate immediately, and at the end of the BIST routine the pump will go into **Run** mode (Refer to Para 3.4). Otherwise the pump will go into **Standby** mode.

3.4 At the end of the BIST routine, if the pump is not already in the **Run** mode, press the **Run/ Standby** button on the pump control panel to start the **Run** sequence, as follows:

3.4.1 The **green** indicator on the front case and the **Wait** and **Comfort** indicators on the pump control panel will illuminate immediately.

3.4.2 The **Run/Standby** indicator will quickly flash on - off - on, and then remain illuminated.

3.5 Allow approximately 7 minutes for the mattress overlay, 15 minutes for the mattress replacement or 3 minutes for the seat cushion to inflate fully.

3.6 The amber **Wait** indicator will go off once the mattress/seat is fully inflated.

4 Checking the Pump Pressures without a Computer

4.1 Plug in and switch on the mains/power supply to the pump.

4.2 The BIST routine will run for approximately 20 seconds (Refer to Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the BIST routine.*

4.3 Connect the 3-way pump tubeset adaptor (Table 5, Item 50) to the pump (Refer to Figure 17).

4.4 Connect the flow/pressure rig (Table 5, Item 40) to the static feed “C” on the 3-way pump tubeset adaptor. Make sure that the two alternating feeds “A” and “B” on the 3-way pump tubeset adaptor are blanked off (Refer to Figure 17).

4.5 Press the **Run/Standby** button on the pump to start the pump.

4.6 Fully open the valve on the flow/pressure rig.

4.7 After a couple of seconds at free flow, close the valve on the flow/pressure rig to create back pressure on the static feed “C”.

4.8 The reading on the pressure gauge should rise and stabilise.

Note: *Do not check the actual pressure gauge reading.*

4.9 The back pressure will cause the pump to switch the air flow switch from the static feed “C” to the alternating feed “A”. When this occurs, connect the flow/pressure rig to the alternating feed “A” on the 3-way pump tubeset adaptor. Make sure that the static feed “C” and the other alternating feed “B” on the 3-way pump tubeset adaptor are blanked off.

4.10 Fully open the valve on the flow/pressure rig.

4.11 After a couple of seconds at free flow, close the valve on the flow/pressure rig to create back pressure on the alternating feed “A”.

4.12 The reading on the pressure gauge should rise and stabilise. Check that the pressure gauge reading is 50±10 mmHg:

4.12.1 If the pressure gauge reading is within ±10 mmHg of 50 mmHg, then continue the test at Para 4.13.

4.12.2 If the pressure gauge reading is ***NOT*** within ±10 mmHg of 50 mmHg, then carry out the procedure to re-calibrate the pressure transducer (Refer to Page 19, Section 12).

4.13 The back pressure will cause the pump to switch the air flow switch from the alternating feed “A” to the alternating feed “B”. When this occurs, connect the flow/pressure rig to the alternating feed “B” on the 3-way pump tubeset adaptor. Make sure that the static feed “C” and the other alternating feed “A” on the pump manifold assembly are blanked off.

4.14 Fully open the valve on the flow/pressure rig.

4.15 After a couple of seconds at free flow, close the valve on the flow/pressure rig to create back pressure on the alternating feed “B”.

4.16 The reading on the pressure gauge should rise and stabilise. Check that the pressure gauge reading is 25±10 mmHg:

4.16.1 If the pressure gauge reading is within ±10 mmHg of 25 mmHg, then the pump pressures are correct, and the test has passed. Go to Para 4.17.

4.16.2 If the pressure gauge reading is ***NOT*** within ±10 mmHg of 25 mmHg, then carry out the procedure to re-calibrate the pressure transducer (Refer to Page 19, Section 12).

4.17 Switch off the mains/power supply to the pump.

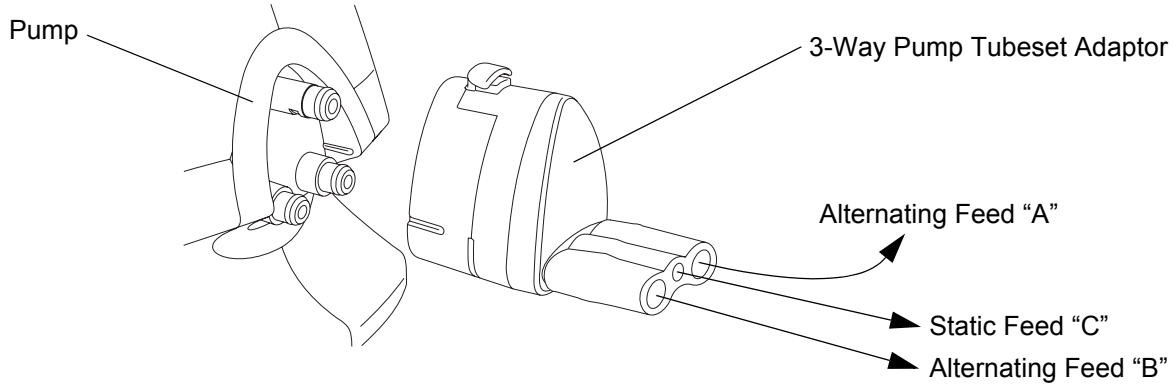


Figure 17 - 3-Way Pump Tubeset Adaptor

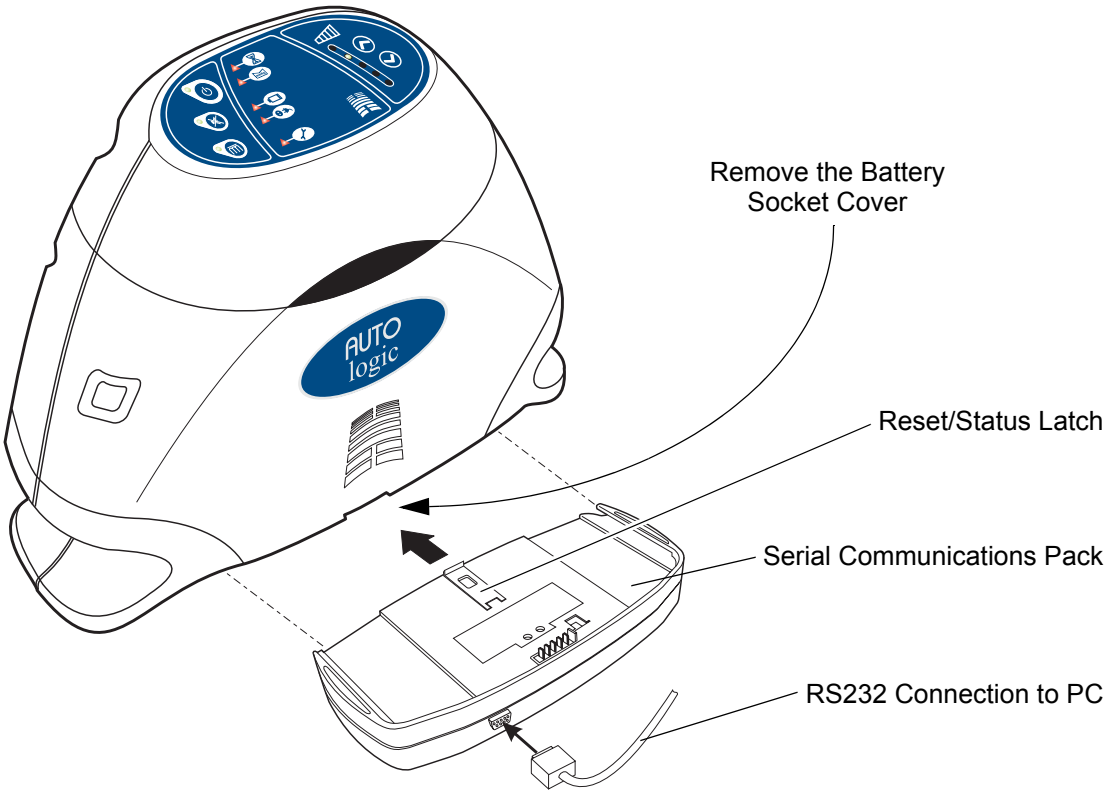
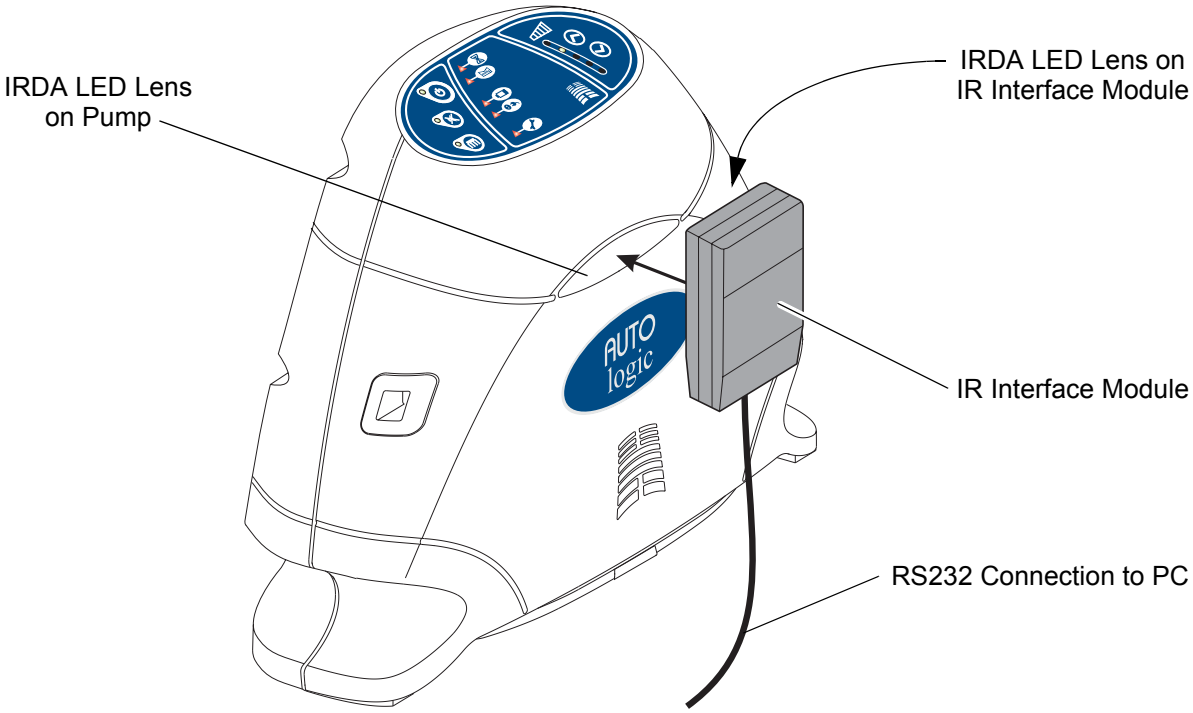


Figure 18 - Installing the Serial Communications Pack



Note: Make sure the IR Interface Module and Pump are facing each other, and as close as possible.

Figure 19 - Installing the IR Interface Module

5 Connecting the Pump to a Personal Computer (PC)

Laptop / Desktop PC

To provide extra monitoring and control of the pump during servicing, the pump must be connected to either a laptop or desktop PC running Microsoft® Windows (Table 5, Item 30).

The Communicator software (Table 5, Item 60) is installed and run on the computer, which sets up a Windows Graphical User Interface on the computer. The different menus and tabs provide full user control of the pump.

Computer Communication

The connection between the pump and the PC (laptop or desktop) can be either of the following:

- Serial Communications Pack (Table 5, Item 20). The Serial Communications Pack is installed directly onto the bottom of the pump in place of a standard battery pack. The Serial Communications Pack connects to an RS232 communications port on the PC via an external cable and to the pump via an internal RS232 link. To install the Serial Communications Pack, refer to Para 5.1 below.
- IR Interface Module (Table 5, Item 10). The IR Interface Module is a free-standing unit, and connects to an RS232 communications port on the PC via a cable and to the pump via an infrared link. To install the IR Interface Module, refer to Para 5.3 below.

5.1 Installing the Serial Communications Pack (Refer to Figure 18):

5.1.1 Make sure the PC is switched off.

5.1.2 Connect the 9-way D-type RS232 plug on the end of the Serial Communications Pack cable to the serial port on the PC.

5.1.3 Switch on the PC. During its power-up initialisation routine, the PC will “recognise” that the Serial Communications Pack is connected to it.

5.1.4 Remove the battery socket cover from the base of the pump.

5.1.5 From the front of the pump, slide the Serial Communications Pack over the guides on the base of the pump, and click into place.

5.2 Removing the Serial Communications Pack from the pump (Refer to Figure 18):

5.2.1 Depress the Reset/Status Latch at the rear of the pump/battery pack.

5.2.2 Slide the battery out from the base of the pump, towards the front of the pump.

5.2.3 Install the battery socket cover onto the base of the pump.

5.3 Installing the IR Interface Module (Refer to Figure 19):

5.3.1 Make sure the PC is switched off.

5.3.2 Connect the 9-way D-type RS232 plug on the end of the IR Interface Module cable to the serial port on the PC.

5.3.3 Switch on the PC. During its power-up initialisation routine, the PC will “recognise” that the IR Interface Module is connected to it.

5.3.4 Place the IR Interface Module in front of the pump, such that the small clear plastic window on the front of each unit (covering the infrared transmitter and receiver) face each other, and are as close together as possible.

Note: *The distance between the two units should be a **maximum** of 0.3m (1 foot) for optimum infrared data transmission.*

Note: *The two batteries in the IR Interface Module (Table 5, Item 10) have a short life. To increase the life of the batteries, always switch off the power to the IR Interface Module by disconnecting the 9-way D-type plug (on the end of the IR Interface Module cable) from the PC **when the testing is complete**.*

6 Running the Communicator Software

6.1 Install the Communicator software (Table 5, Item 60) on the PC (Refer to Chapter 11 “Installing and Running the Communicator Software”).

6.2 Install the Serial Communications Pack (Table 5, Item 20) or the IR Interface Module (Table 5, Item 10) onto the PC and the pump (Refer to Page 5, Section 5).

6.3 Double-click the **Communicator** icon on the desktop of the PC. A “welcome” dialog box is briefly displayed, followed by the application startup dialog box (Refer to Figure 20).

Figure 20 - Communicator Software - Application Startup Screen

6.4 Set the RS232 port on the PC that the IR Interface Module or the Serial Communications Pack is connected to (either **COM1** or **COM2**), using the **Please select COM port** drop-down menu.

6.5 There are five buttons on the **Please select software from list**:

- **IrDA Communicator**. Clicking this button will start the Communicator software running, using the IR Interface Module (Table 5, Item 10) to connect the pump to the PC.
- **Serial Communicator**. Clicking this button will start the Communicator software running, using the Serial Communications Pack (Table 5, Item 20) to connect the pump to the PC.
- **MCM Calibrator**. Do ***NOT*** click this button. This facility is not used during the service.
- **Battery Pack Logger**. Do ***NOT*** click this button. This facility is not used during the service.
- **Exit**. Clicking this button will close the Communicator software.

6.6 To start the Communicator software using the Serial Communications Pack, do the following:

6.6.1 Click the **Serial Communicator** button on the **Please select software from list**.

6.6.2 The **No command list loaded** dialog box will be displayed (Refer to Figure 21).

6.6.3 Make sure that the top right of the dialog box shows:

- The **File Version: SERS001-XX**, where “**XX**” is the version number, and must be “**02**” or higher.
- The **Serial Communicator** icon .

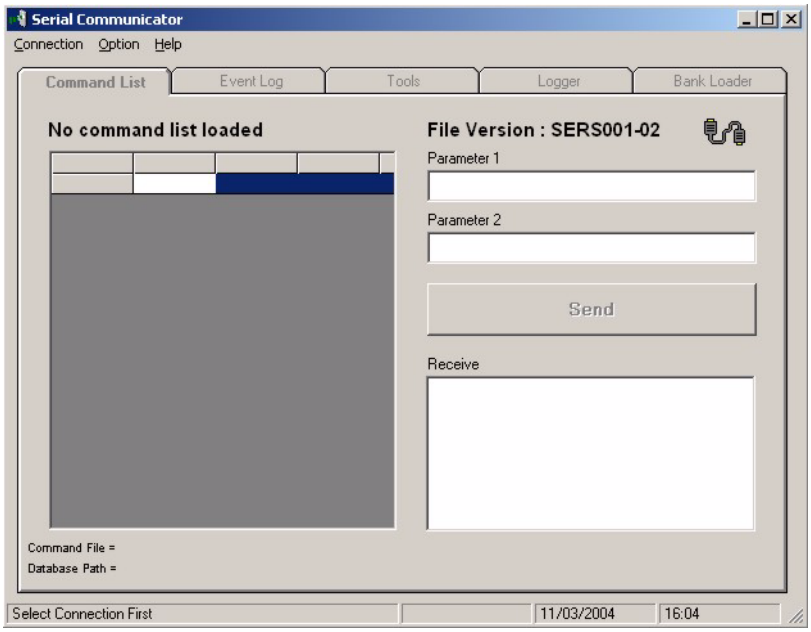


Figure 21 - Communicator Software - No Command List Loaded - Serial Communicator

6.7 To start the Communicator software using the IR Interface Module, do the following:

6.7.1 Click the **IrDA Communicator** button on the **Please select software from list**.

6.7.2 The **No command list loaded** dialog box will be displayed (Refer to Figure 22).

6.7.3 Make sure that the top right of the dialog box shows:

- The **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.
- The **IrDA Communicator** icon .

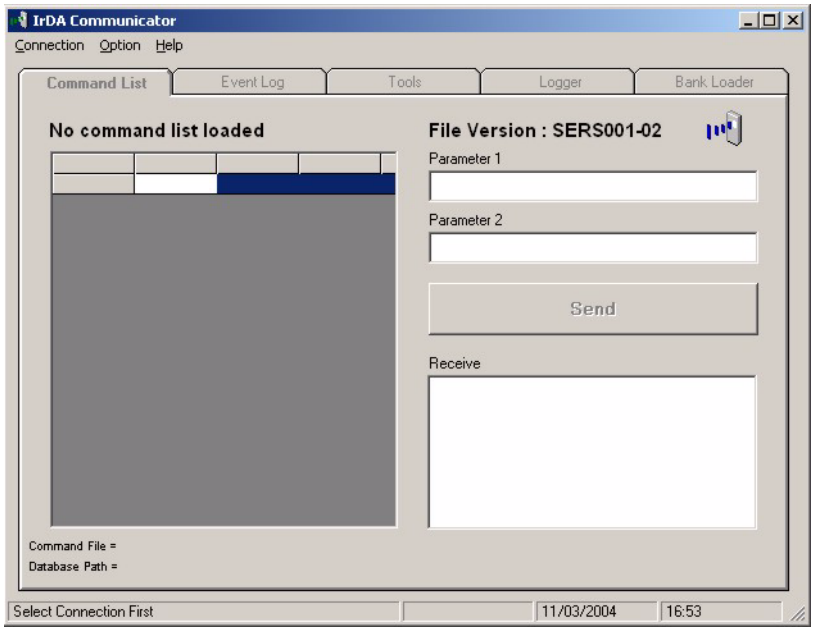


Figure 22 - Communicator Software - No Command List Loaded - IrDA Communicator

IR Interface
IR Interface (MIS 216) not detected
Check cable and battery and press Retry if you want to start IrDA communicator with MIS 216 support
Press Cancel if you want to use the IrDA Terminal with standard COM Port
Retry
Cancel

Figure 23 - Communicator Software - IR Interface Not Detected

6.8 When you click the **IrDA Communicator** button (Refer to Para 6.7, above), if the **IR Interface Not Detected** dialog box (Refer to Figure 23) is displayed instead of the **No command list loaded** dialog box (Refer to Figure 22), do the following:

6.8.1 Click **Cancel** on the **IR Interface Not Detected** dialog box.

6.8.2 The **No command list loaded (Serial Communicator)** dialog box will be displayed (Refer to Figure 21).

Note: *If the Communicator software can not detect the IR Interface Module, it assumes the pump is connected via the **Serial Communicator**.*

6.8.3 On the **No command list loaded** dialog box, click **Connection**, then **Exit**.

6.8.4 The application startup dialog box is then displayed (Refer to Figure 20).

6.8.5 Select the other RS232 **COM** port on the PC, as detailed in Para 6.4.

6.8.6 If **COM1** was selected previously, select **COM2** this time.

6.8.7 Click the **IrDA Communicator** button to restart the Communicator software using the IR Interface Module (Refer to Para 6.7, above).

6.8.8 If the **IR Interface Not Detected** dialog box is still displayed, then:

6.8.8.1 Repeat the procedure in Para 6.8.1 to Para 6.8.4, above.

6.8.8.2 Check and/or replace the batteries in the IR Interface Module.

6.8.8.3 Then click the **IrDA Communicator** button (Refer to Para 6.8.7).

6.9 When the correct **No command list loaded** dialog box (Refer to Figures 21 and 22) has been successfully loaded, click **Connection**, then click **Auto Logic** (Refer to Figure 24).

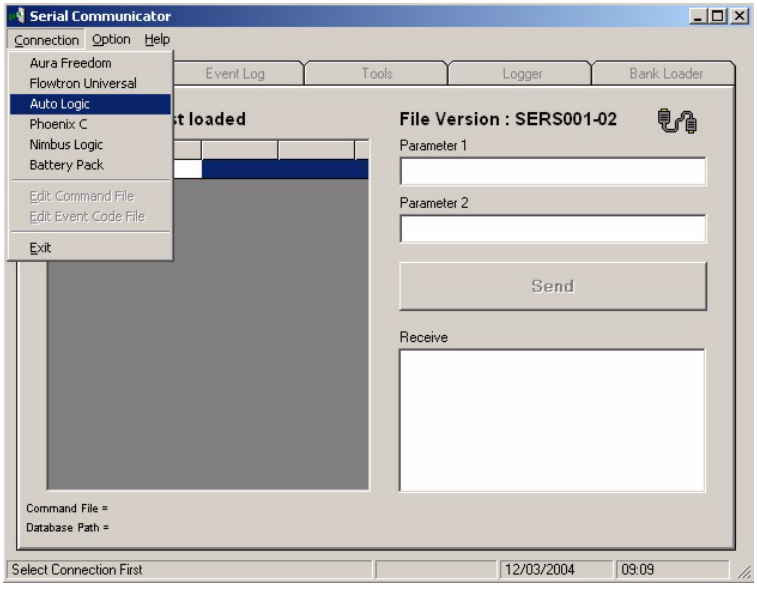


Figure 24 - Communicator Software - Selection of Auto Logic Command List

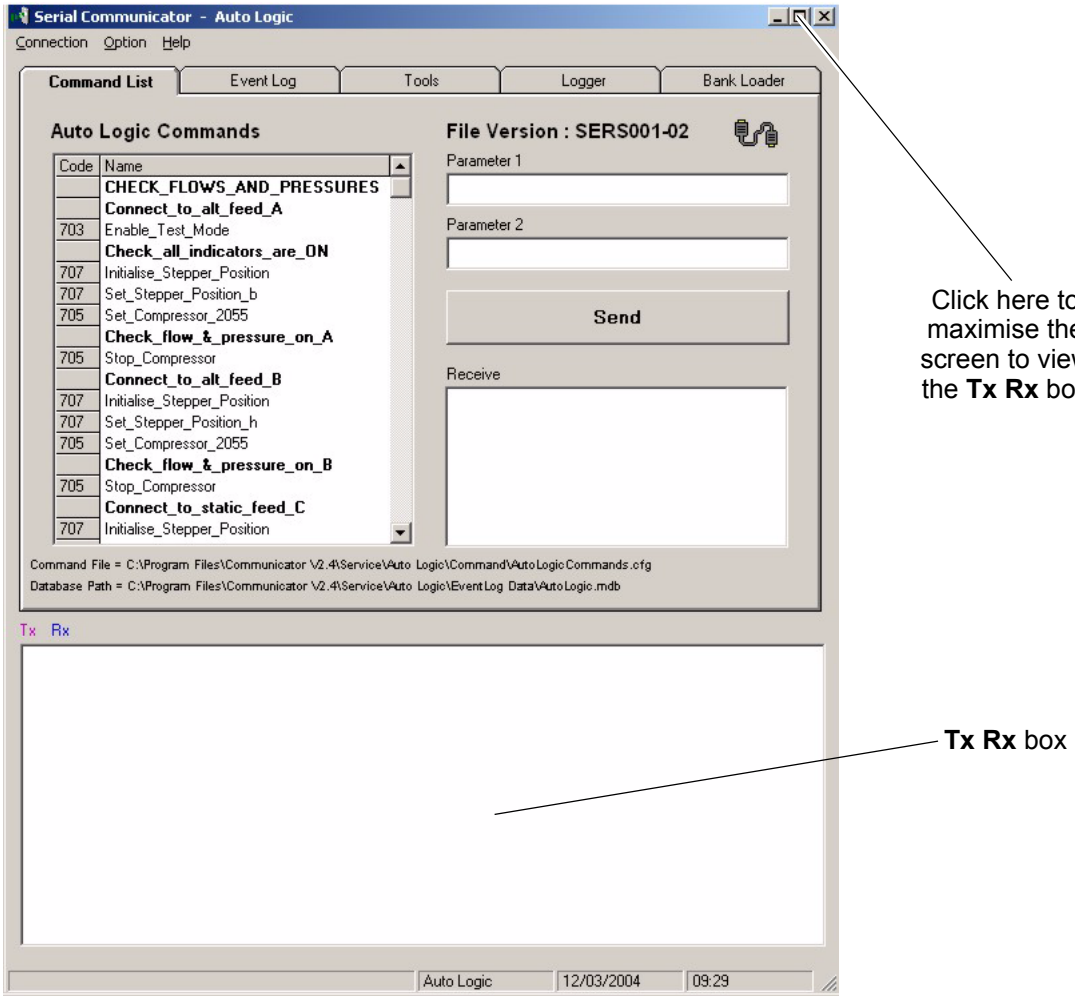


Figure 25 - Communicator Software - Auto Logic Commands with Screen Maximised

6.10 The menu of **Auto Logic Commands** is then displayed (Refer to Figure 25).

6.11 Before starting any test procedure using the Communicator software, ***always*** click the middle button at the top right of the dialog box to maximise the screen (Refer to Figure 25).

Note: *You must always "maximise" the screen to view the **Tx Rx** box at the bottom of the dialog box (the **Tx Rx** box is hidden in the "normal" dialog box view). The **Tx Rx** box will display all commands sent to the pump, all parameters sent with each command and all responses received from the pump. This makes it easier to carry out the testing.*

7 Executing Commands and Test Sequences on the Command Menu

7.1 Run the Communicator software on the PC (Refer to Page 6, Section 6).

7.2 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.

7.3 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

7.4 Make sure that the screen is "maximised" (Refer to Para 6.11, above).

Note: *Each time the **Auto Logic** pump is powered up, the default connection to the PC is via the Serial Communications Pack. If you want to connect the pump to the PC via the IR Interface Module, then carry out the procedure to make the pump operate via the IR Interface Module (Refer to Page 12, Section 8).*

Executing Single Commands

7.5 The menu of **Auto Logic Commands** is split into two columns (Refer to Figure 25):

- **Code**. This is the 3-digit command code sent to the pump.
- **Name**. This is a description of the command for the service engineer.

7.6 Each command can be one of two types:

- If there is a 3-digit number in the **Code** column, and there is "plain" text in the **Name** column, then this is a command which will be sent to the pump e.g. 703 - Enable_Test_Mode.
- If the **Code** column is blank, and there is **bold** text in the **Name** column, then this is not a pump command, but a comment or instruction to the service engineer e.g. **Check_pressure_on_gauge**.

7.7 To send a command to the pump:

7.7.1 Click on the appropriate command on the left side of the dialog box e.g. **703 - Enable_Test_Mode**.

7.7.2 If necessary, add or change any parameters on the right side of the dialog box above the **Send** button.

Note: *Do **not** add or change any parameters unless the test procedure says to do so.*

7.7.3 Click **Send** to send the command to the pump.

7.7.4 The command and its parameters are displayed in the **Tx Rx** box.

7.7.5 Any response from the pump is displayed in the **Receive** part of the dialog box, and also in the **Tx Rx** box.

7.7.6 If there is no immediate response from the pump and the **Send** button is "greyed out", then it means that there has been a communication error between the PC and the pump. If you look at the **Tx Rx** box, you will see 10 attempts to send the command to the pump. After 10 failed attempts, a **Communication Error** dialog box is displayed (Refer to Figure 26). Do the following:

7.7.6.1 Check that the pump is powered up and in **Standby**.

7.7.6.2 Check the connections between the PC and the IR Interface Module or Serial Communications Pack.

7.7.6.3 Select the other RS232 **COM** port on the PC, as follows:

- Click **Connection**, then click **Exit** on the drop-down menu.
- The application startup dialog box is then displayed (Refer to Figure 20).
- Select the other RS232 **COM** port on the PC, as detailed in Para 6.4.

Note: *If **COM1** was selected previously, select **COM2** this time.*

- Click the Serial **Communicator** or **IrDA Communicator** button to restart the Communicator software.

7.7.6.4 If the IR Interface Module is being used:

- Check the two batteries in the IR Interface Module.
- Make sure that there are no obstructions between the IR Interface Module and the front of the pump, and they are less than 0.3m (1 foot) apart (Refer to Figure 19).

7.7.6.5 Re-send the command to the pump.

Figure 26 - Communicator Software - Communication Error

7.7.7 If the command is successful, **SUCCESS** is displayed in the **Receive** part of the dialog box e.g. **703 - SUCCESS**, where **703** is the command that was sent to the pump.

7.7.8 If you try and send a command which is not allowed by the pump (e.g if you try to send certain commands when the pump is not in **Test Mode**), the **Receive** part of the dialog box will show **NOT_AVAILABLE** e.g. **501 = NOT_AVAILABLE**, where **501** is the command sent to the pump.

7.7.9 When you send command **707 - Set_Stepper_Position** to the pump, ***you must listen to the movement of the stepper motor in the pump manifold assembly***. You must wait for the stepper motor to stop turning before you attempt to send another command to the pump.

Executing Test Sequences

7.8 On the Communicator software on the PC, the menu of **Auto Logic Commands** contains:

- General pump commands at the bottom of the menu. These are grouped into various sections e.g. **SERVICE**, **TESTING**, etc.
- Specific test “sections” at the top of the menu e.g. **CHECK_FLOWS_AND_PRESSURES**. These contain groups of general pump commands to run each test, and service engineer comments which are not sent to the pump (Refer to Figure 25).

7.9 To run a specific test sequence from the menu of **Auto Logic Commands**:

7.9.1 The service manual will refer to the name of the test sequence in the menu of **Auto Logic Commands**.

7.9.2 Scroll through the menu of **Auto Logic Commands** to find the relevant test section at the top of the menu e.g. **CHECK_FLOWS_AND_PRESSURES**.

7.9.3 The pump commands for each test must be executed in the same order as they appear in the **Auto Logic Commands** menu, starting with the first command under the test title, and in the same order as in the test procedure in the service manual.

Note: *Make sure that each command has been executed successfully before attempting to select and execute the next command in the test sequence.*

7.9.4 To make the testing easier to follow, if a particular pump command has to be repeated in the service manual test procedure, then the specific pump command will appear more than once in the test section of the **Auto Logic Commands** menu.

8 Operating the Pump from a PC via the IR Interface Module

Each time the **Auto Logic** pump is powered up, the default connection to the PC is via the Serial Communications Pack. If you want to connect the pump to the PC via the IR Interface Module, then carry out the following procedure to make the pump operate via the IR Interface Module.

8.1 Do **NOT** switch on the mains/power supply to the pump until instructed to do so.

8.2 Connect the pump to the PC using the IR Interface Module (Refer to Page 5, Section 5).

Note: *Make sure the IR Interface Module is positioned correctly in front of the pump.*

8.3 Run the Communicator software on the PC, using the IR Interface Module only (Refer to Page 6, Section 6).

Note: *You **MUST** click **IrDA Communicator** on the **Application Startup Screen** (Refer to Para 6.7 and Figure 20, above).*

8.4 Make sure that the top right of the dialog box shows:

- The **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.
- The **IrDA Communicator** icon .

8.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

8.6 Plug in and switch on the mains/power supply to the pump. The Built-In Self-Test (BIST) routine will immediately start running on the pump, and will run for approximately 20 seconds.

Note: *Do NOT press the **Run/Standby** button on the control panel during the BIST routine.*

8.7 During this power-up BIST routine, select and send ***any*** command from the menu of **Auto Logic Commands** e.g. **703 - Enable_Test_Mode** (Refer to Page 10, Section 7). Ignore any responses received back from the pump, since the pump is running the BIST routine.

Note: *It does not matter what command is sent, provided that the command is sent **before** the BIST routine has finished.*

8.8 At the end of the BIST routine, the following will be displayed in the **TxRx** box:

IrDA Phy Selected

STANDBY

8.9 The pump is now set up to communicate via the IR Interface Module.

Note: *The connection to the PC will remain via the IR Interface Module until the pump is switched off.*

8.10 If the pump is not communicating with the PC via the IR Interface Module, do the following:

8.10.1 Switch off the pump.

8.10.2 After a few seconds, repeat the procedure detailed in Para 8.6 to Para 8.9.

8.11 If the pump is still not communicating with the PC via the IR Interface Module, do the following:

8.11.1 Check the connections between the PC and the IR Interface Module.

8.11.2 Select the other RS232 **COM** port on the PC, as follows:

8.11.2.1 Click **Connection**, then click **Exit** on the drop-down menu.

8.11.2.2 The application startup dialog box is then displayed (Refer to Figure 20).

8.11.2.3 Select the other RS232 **COM** port on the PC, as detailed in Para 6.4.

Note: *If **COM1** was selected previously, select **COM2** this time.*

8.11.2.4 Click **IrDA Communicator** to restart the Communicator software.

8.11.3 Finally, check the following:

- Make sure that there are no obstructions between the IR Interface Module and the front of the pump, and they are less than 0.3m (1 foot) apart (Refer to Figure 19).
- The two batteries in the IR Interface Module.

8.11.4 Make sure that the command was sent to the pump ***during*** the BIST routine (Refer to Para 8.7, above).

Note: *An alternative method of connecting the pump via the IR Interface Module is to install a battery pack onto the pump. This automatically forces the pump to connect via the IR Interface Module.*

9 Closing the Communicator Software

9.1 To close the Communicator software, do the following:

9.1.1 Click **Connection**, then click **Exit** on the drop-down menu.

9.1.2 The application startup dialog box is then displayed (Refer to Figure 20).

9.1.3 Click **Exit**.

9.1.4 The Communicator software is closed.

9.2 If you try to close the Communicator software by selecting and closing the application startup dialog box directly, you will be prevented from closing the Communicator software (Refer to Figure 27). Carry out the procedure in Para 9.1, above.

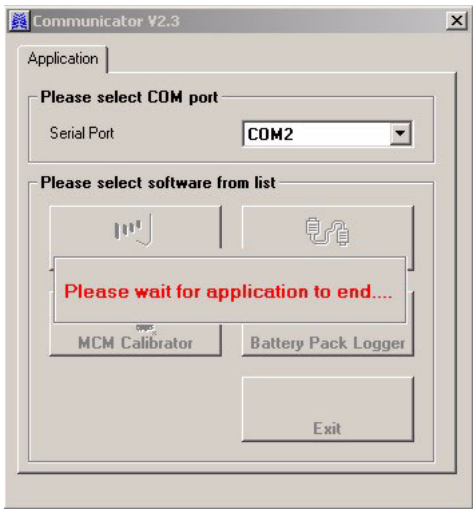


Figure 27 - Communicator Software - Closing the Software

10 Checking the Pump Pressures and Free Flows with a Computer

10.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

10.2 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Page 5, Section 5).

10.3 Run the Communicator software on the PC (Refer to Page 6, Section 6).

10.4 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.

10.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

10.6 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 25).

10.7 To connect the mains/power supply to the pump, do the following:

10.7.1 If the Serial Communications Pack is being used:

10.7.1.1 Plug in and switch on the mains/power supply to the pump.

10.7.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

10.7.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Page 12, Section 8).

10.8 Connect the 3-way pump tubeset adaptor (Table 5, Item 50) to the pump (Refer to Figure 28).

10.9 Connect the flow/pressure rig (Table 5, Item 40) to the alternating feed **A** on the 3-way pump tubeset adaptor. Make sure that the other alternating feed **B** and the static feed **C** on the 3-way pump tubeset adaptor are blanked off (Refer to Figure 28).

10.10 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **CHECK_FLOWS_AND_PRESSURES** (Refer to Page 10, Section 7).

10.11 Send the command **703 - Enable_Test_Mode**, to put the pump into test mode.

10.12 Check that all the indicators on the top and front of the pump are illuminated.

10.13 Send the command **707 - Initialise_Stepper_Position**. Listen to the movement of the stepper motor in the pump manifold assembly, and wait for it to stop turning before you attempt to send the next command to the pump.

10.14 Send the command **707 - Set_Stepper_Position_b**.

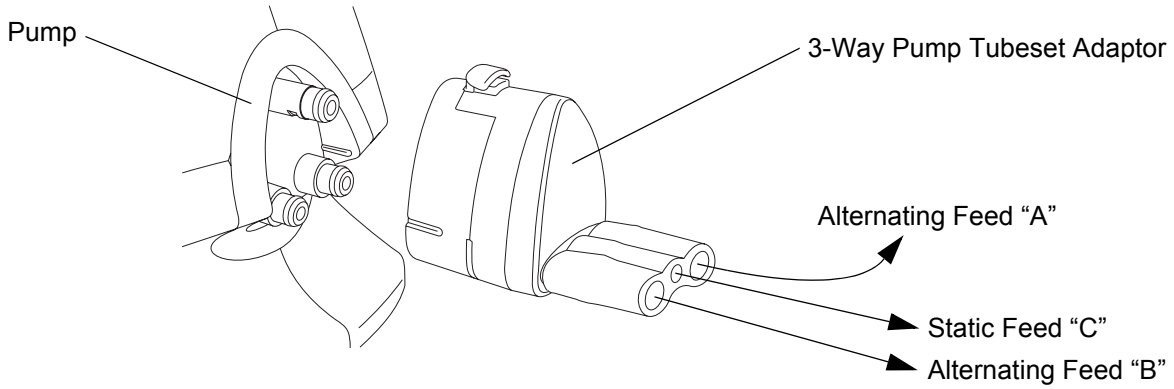


Figure 28 - 3-Way Pump Tubeset Adaptor

10.15 Send the command **705 - Set_Compressor_2055**.

10.16 Fully open the valve on the flow/pressure rig.

10.17 The reading on the flow meter should rise and stabilise. Check that the flow meter reading is greater than **8 lpm**:

10.17.1 If the flow is greater than **8 lpm**, then continue the test at Para 10.18.

10.17.2 If the flow is less than **8 lpm**, then the compressor is faulty.

10.18 After measuring the flow rate, close the valve on the flow/pressure rig to create back pressure on the alternating feed **A**.

10.19 The reading on the pressure gauge should rise and stabilise. Check that the pressure gauge reading is greater than **100 mmHg**:

10.19.1 If the pressure gauge reading is greater than **100 mmHg**, then continue the test at Para 10.20.

10.19.2 If the pressure gauge reading is less than **100 mmHg**, then the compressor is faulty.

10.20 Send the command **705 - Stop_Compressor**.

10.21 Connect the flow/pressure rig to the alternating feed **B** on the 3-way pump tubeset adaptor. Make sure that the other alternating feed **A** and the static feed **C** on the 3-way pump tubeset adaptor are blanked off.

10.22 Send the command **707 - Initialise_Stepper_Position**.

10.23 Send the command **707 - Set_Stepper_Position_h**.

10.24 Send the command **705 - Set_Compressor_2055**.

10.25 Fully open the valve on the flow/pressure rig.

10.26 The reading on the flow meter should rise and stabilise. Check that the flow meter reading is greater than **8 lpm**:

10.26.1 If the flow is greater than **8 lpm**, then continue the test at Para 10.27.

10.26.2 If the flow is less than **8 lpm**, then the compressor is faulty.

10.27 After measuring the flow rate, close the valve on the flow/pressure rig to create back pressure on the alternating feed **B**.

10.28 The reading on the pressure gauge should rise and stabilise. Check that the pressure gauge reading is greater than **100 mmHg**:

10.28.1 If the pressure gauge reading is greater than **100 mmHg**, then continue the test at Para 10.29.

10.28.2 If the pressure gauge reading is less than **100 mmHg**, then the compressor is faulty.

10.29 Send the command **705 - Stop_Compressor**.

10.30 Connect the flow/pressure rig to the static feed **C** on the 3-way pump tubeset adaptor. Make sure that the two alternating feeds **A** and **B** on the 3-way pump tubeset adaptor are blanked off.

10.31 Send the command **707 - Initialise_Stepper_Position**.

10.32 Send the command **707 - Set_Stepper_Position_p**.

10.33 Send the command **705 - Set_Compressor_2055**.

10.34 Fully open the valve on the flow/pressure rig.

10.35 The reading on the flow meter should rise and stabilise. Check that the flow meter reading is greater than **8 lpm**:

10.35.1 If the flow is greater than **8 lpm**, then continue the test at Para 10.36.

10.35.2 If the flow is less than **8 lpm**, then the compressor is faulty.

10.36 After measuring the flow rate, close the valve on the flow/pressure rig to create back pressure on the alternating feed **B**.

10.37 The reading on the pressure gauge should rise and stabilise. Check that the pressure gauge reading is greater than **100 mmHg**:

10.37.1 If the pressure gauge reading is greater than **100 mmHg**, then continue the test at Para 10.38.

10.37.2 If the pressure gauge reading is less than **100 mmHg**, then the compressor is faulty.

10.38 Send the command **705 - Stop_Compressor**.

10.39 Send the command **704 - Disable_Test_Mode** to put the pump into standby mode.

10.40 Send the command **70A - Read_Pressure**.

10.41 Read the pressure value displayed in the **Receive** box. Check that the pressure value is **0.0 ± 5 mmHg**:

10.42 Switch off the mains/power supply to the pump.

11 Checking the Calibration of the Pressure Transducer

11.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

11.2 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Page 5, Section 5).

11.3 Run the Communicator software on the PC (Refer to Page 6, Section 6).

11.4 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.

11.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

11.6 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 25).

11.7 To connect the mains/power supply to the pump, do the following:

11.7.1 If the Serial Communications Pack is being used:

11.7.1.1 Plug in and switch on the mains/power supply to the pump.

11.7.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

11.7.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Page 12, Section 8).

11.8 Connect the 3-way pump tubeset adaptor (Table 5, Item 50) to the pump (Refer to Figure 28).

11.9 Connect the flow/pressure rig (Table 5, Item 40) to the alternating feed **A** on the 3-way pump tubeset adaptor. Make sure that the other alternating feed **B** and the static feed **C** on the 3-way pump tubeset adaptor are blanked off (Refer to Figure 28).

11.10 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **CHECK_TRANSDUCER** (Refer to Page 10, Section 7).

11.11 Send the command **703 - Enable_Test_Mode**, to put the pump into test mode.

11.12 Check that all the indicators on the top and front of the pump are illuminated.

11.13 Send the command **707 - Initialise_Stepper_Position**. Listen to the movement of the stepper motor in the pump manifold assembly, and wait for it to stop turning before you attempt to send the next command to the pump.

11.14 Send the command **707 - Set_Stepper_Position_b**.

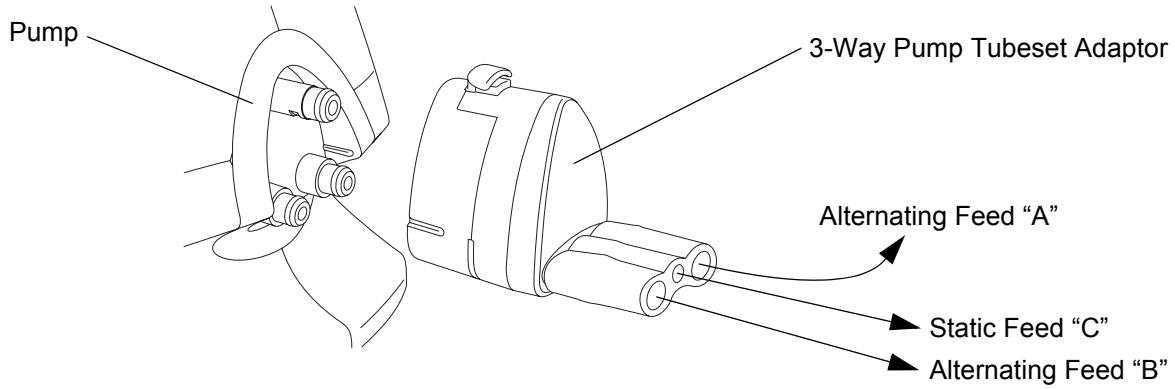


Figure 29 - 3-Way Pump Tubeset Adaptor

11.15 Send the command **705 - Set_Compressor_1455**.

11.16 Fully open the valve on the flow/pressure rig.

11.17 After a few seconds at free flow, close the valve on the flow/pressure rig to create back pressure on the alternating feed **A**.

11.18 The reading on the pressure gauge should rise and stabilise. Check that the pressure gauge reading is between **100 and 140 mmHg**:

11.18.1 If the pressure gauge reading is between **100 and 140 mmHg**, then continue the test at Para 11.19.

11.18.2 If the pressure gauge reading is ***NOT*** between **100 and 140 mmHg**, then do the following:

11.18.2.1 Select the command **705 - Set_Compressor_1455**, but do not send it to the pump.

11.18.2.2 Make small changes to the **Level** parameter of command **705**, by overwriting the values in the box.

Note: *An increase in the **Level** parameter will increase the pressure gauge reading.*

11.18.2.3 Send the command **705** to the pump.

11.18.2.4 Repeat Para 11.18.2.1 to Para 11.18.2.3 until the pressure gauge reading is between **100 and 140 mmHg**.

11.18.2.5 Continue the test at Para 11.19.

11.19 Make a note of the actual pressure gauge reading.

11.20 Send the command **70A - Read_Pressure**.

11.21 Compare the value of the pressure received from the pump in the **Receive** part of the dialog box on the PC against the value of the pressure shown on the pressure/flow rig:

11.21.1 If the two values are within **±5 mmHg** of each other, then continue the test at Para 11.22.

11.21.2 If the two values are ***NOT*** within **±5 mmHg** of each other, then carry out the procedure to re-calibrate the pressure transducer (Refer to Page 19, Section 12).

11.22 Send the command **705 - Stop_Compressor**.

11.23 Send the command **704 - Disable_Test_Mode** to put the pump into standby mode.

11.24 Switch off the mains/power supply to the pump.

12 Re-Calibrating the Pressure Transducer and Verifying the Pressures

Note: *This procedure can only be carried out on pumps which have software **V2.02** or higher (Refer to Page 19, Checking the Software Version of the Pump, below).*

Note: *Do **NOT** connect the 3-way pump tubeset adaptor (Table 5, Item 50) to the pump until instructed to do so.*

12.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

12.2 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Page 5, Section 5).

12.3 Run the Communicator software on the PC (Refer to Page 6, Section 6).

12.4 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.

12.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

12.6 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 25).

12.7 To connect the mains/power supply to the pump, do the following:

12.7.1 If the Serial Communications Pack is being used:

12.7.1.1 Plug in and switch on the mains/power supply to the pump.

12.7.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

12.7.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Page 12, Section 8).

12.8 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **RE-CALIBRATE_TRANSDUCER** (Refer to Page 10, Section 7).

Checking the Software Version of the Pump

12.9 Send the command **801 - Read_Software_Version**.

12.10 Check the **Receive** part of the dialog box. There should be **801 = VX.XX**, where **X.XX** is the version number of the pump software:

12.10.1 If the version number is **2.02** or higher, then continue the following transducer re-calibration procedure at Para 12.11.

12.10.2 If the version number is lower than **2.02**, then the following transducer re-calibration procedure can ***NOT*** be carried out.

Re-Calibrating the Pressure Transducer

12.11 Send the command **703 - Enable_Test_Mode**, to put the pump into test mode.

12.12 Send the command **707 - Initialise_Stepper_Position**. Listen to the movement of the stepper motor in the pump manifold assembly, and wait for it to stop turning before you attempt to send the next command to the pump.

12.13 Send the command **707 - Set_Stepper_Position_b**.

12.14 Send the command **70E - Calibrate**.

12.15 Send the command **70F - Auto_Balance**.

12.16 Wait until **WAITING** is displayed in the **TxRx** box.

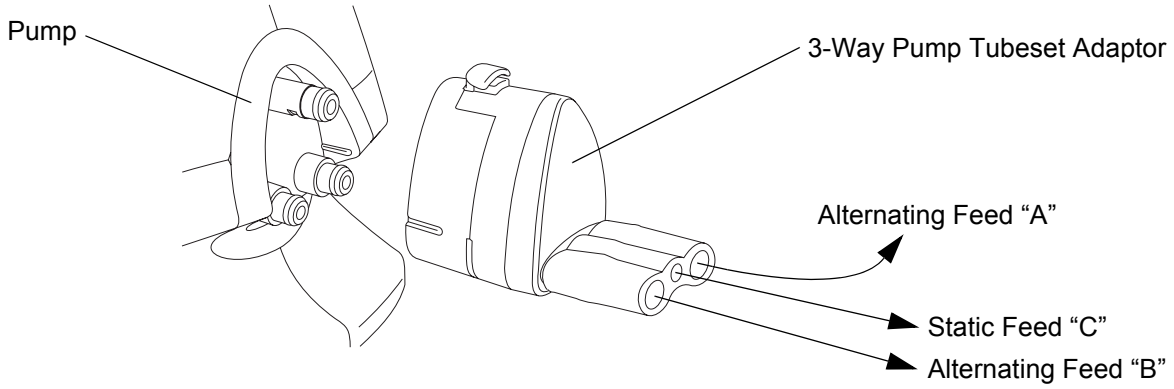


Figure 30 - 3-Way Pump Tubeset Adaptor

12.17 Send the command **705 - Set_Compressor_1455**.

Note: *Make sure that the compressor is running and air is coming out of the pump outlet ports.*

12.18 Connect the 3-way pump tubeset adaptor (Table 5, Item 50) to the pump (Refer to Figure 30).

12.19 Connect the flow/pressure rig (Table 5, Item 40) to the alternating feed **A** on the 3-way pump tubeset adaptor. Make sure that the other alternating feed **B** and the static feed **C** on the 3-way pump tubeset adaptor are blanked off (Refer to Figure 30).

12.20 Fully open the valve on the flow/pressure rig.

12.21 After a few seconds at free flow, close the valve on the flow/pressure rig to create back pressure on the alternating feed **A**.

12.22 The reading on the pressure gauge should rise and stabilise. Check that the pressure gauge reading is approximately **110 - 130 mmHg**:

12.22.1 If the pressure gauge reading is approximately **110 - 130 mmHg**, then continue the test at Para 12.23.

12.22.2 If the pressure gauge reading is ***NOT*** approximately **110 - 130 mmHg**, then do the following:

12.22.2.1 Select the command **705 - Set_Compressor_1455**, but do not send it to the pump.

12.22.2.2 Make small changes to the **Level** parameter, by overwriting the value.

Note: *An increase in the **Level** parameter will increase the pressure gauge reading.*

12.22.2.3 Send the command **705 - Set_Compressor_1455** to the pump.

12.22.2.4 Repeat Para 12.22.2.1 to Para 12.22.2.3 until the pressure gauge reading is approximately **110 - 130 mmHg**.

12.22.2.5 Continue the test at Para 12.23.

12.23 Make a note of the actual pressure gauge reading.

12.24 Execute command **710 - Auto_Gain**, as follows:

12.24.1 Select the command **710 - Auto_Gain**, but do not send it to the pump.

12.24.2 In the **Applied_Pressure** parameter box, overwrite the value with the actual pressure gauge reading from Para 12.23, above.

12.24.3 Send the command **710 - Auto_Gain** to the pump.

12.25 Wait until **WAITING** is displayed in the **TxRx** box.

12.26 Send the command **705 - Stop_Compressor**.

12.27 Send the command **70F - Auto_Balance**.

12.28 Wait until **WAITING** is displayed in the **TxRx** box.

12.29 Send the command **711 - Calibration_End**.

Verifying the Pressures

12.30 Check that the pressure gauge is reading **0 mmHg**.

12.31 Send the command **70A - Read_Pressure**.

12.32 Compare the value of the pressure received from the pump in the **Receive** part of the dialog box on the PC against the value of the pressure shown on the pressure/flow rig. The two values should be within **±5 mmHg** of each other.

12.33 Send the command **705 - Set_Compressor_1455**.

12.34 Fully open the valve on the flow/pressure rig.

12.35 After a few seconds at free flow, close the valve on the flow/pressure rig to create back pressure on the alternating feed **A**.

12.36 The reading on the pressure gauge should rise and stabilise. Check that the pressure gauge reading is approximately **110 - 130 mmHg**:

12.36.1 If the pressure gauge reading is approximately **110 - 130 mmHg**, then continue the test at Para 12.37.

12.36.2 If the pressure gauge reading is ***NOT*** approximately **110 - 130 mmHg**, then:

12.36.2.1 Repeat Para 12.22.2, above, to adjust the pressure gauge reading.

12.36.2.2 Continue the test at Para 12.37.

12.37 Make a note of the pressure gauge reading.

12.38 Send the command **70A - Read_Pressure**.

12.39 Compare the value of the pressure received from the pump in the **Receive** part of the dialog box on the PC against the value of the pressure shown on the pressure/flow rig:

12.39.1 If the two values are within **±5 mmHg** of each other, then continue the test at Para 12.45.

12.39.2 If the two values are ***NOT*** within **±5 mmHg** of each other, then continue the test at Para 12.40 to make a fine adjustment to the transducer calibration.

Making Fine Adjustments to the Transducer Calibration

12.40 Select the command **766 - Eng_Fine_Adjust**, but do not send it to the pump.

12.41 In the **Enter_Actual_Pressure** parameter box, overwrite the value with the actual pressure gauge reading from Para 12.37, above.

12.42 Send the command **766 - Eng_Fine_Adjust** to the pump.

12.43 Send the command **70A - Read_Pressure**.

12.44 Compare the value of the pressure received from the pump in the **Receive** part of the dialog box on the PC against the value of the pressure shown on the pressure/flow rig. The two values should be within **±5 mmHg** of each other.

End of Test

12.45 Send the command **705 - Stop_Compressor**.

12.46 Switch off the mains/power supply to the pump.

13 Setting the Service Hours on the Pump

During every pump service, the Service Hours counter on the pump must be set to 17520 hours (which equals two years). The Service Hours counter counts *down* while the pump is operating. When the Service Hours counter reaches zero, the yellow **Service** indicator on the pump control panel will illuminate and remain on to indicate that the pump is ready for a service.

13.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

13.2 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Page 5, Section 5).

13.3 Run the Communicator software on the PC (Refer to Page 6, Section 6).

13.4 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.

13.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

13.6 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 25).

13.7 To connect the mains/power supply to the pump, do the following:

13.7.1 If the Serial Communications Pack is being used:

13.7.1.1 Plug in and switch on the mains/power supply to the pump.

13.7.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

13.7.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Page 12, Section 8).

13.8 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **SERVICE** (Refer to Page 10, Section 7).

13.9 Send the command **202 - Set_Service_Hours_17520**.

Note: *The value of the **Hours** parameter should already be set to **17520**.*

13.10 Send the command **201 - Read_Service_Hours**. Check that the response from the pump, displayed in the **Receive** part of the dialog box, is **201 = 17520 hours**.

13.11 Switch off the mains/power supply to the pump.

14 Checking the Sounder and Power Fail Alarm LED Indicators

14.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

14.2 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Page 5, Section 5).

14.3 Run the Communicator software on the PC (Refer to Page 6, Section 6).

14.4 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.

14.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

14.6 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 25).

14.7 To connect the mains/power supply to the pump, do the following:

14.7.1 If the Serial Communications Pack is being used:

14.7.1.1 Plug in and switch on the mains/power supply to the pump.

14.7.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

14.7.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Page 12, Section 8).

14.8 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **ST7** (Refer to Page 10, Section 7).

14.9 Send the command **C12 - ST7_SET_RUN**.

14.10 **C12 - SUCCESS** is then displayed in the **Receive** part of the dialog box.

14.11 Switch off the mains/power supply to the pump.

14.12 All the LED indicators on the top and front of the pump will be extinguished.

14.13 Within a few seconds, the following **Power Fail Alarm** should occur:

14.13.1 The sounder will start "beeping".

14.13.2 The **Power Fail** LED indicator on the control panel on top of the pump will start flashing (Refer to Figure 16).

14.13.3 The red LED indicator on the front of the pump will start flashing.

14.14 To stop the **Power Fail Alarm**, do either of the following:

- Press the **Run/Standby** button on the pump control panel.
- Switch ON the mains/power supply to the pump again.

15 Setting Up a New Control PCB Assembly

15.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

15.2 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Page 5, Section 5).

15.3 Run the Communicator software on the PC (Refer to Page 6, Section 6).

15.4 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.

15.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

15.6 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 25).

15.7 To connect the mains/power supply to the pump, do the following:

15.7.1 If the Serial Communications Pack is being used:

15.7.1.1 Plug in and switch on the mains/power supply to the pump.

15.7.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

15.7.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Page 12, Section 8).

15.8 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **CONTROL_PCB_SETUP** (Refer to Page 10, Section 7).

Note: *For all of the commands in this section, retain the default values in the parameter boxes, unless instructed to do otherwise.*

15.9 Send the command **703 - Enable_Test_Mode**.

15.10 Send the command **304 - Set_GMT_Date**.

15.11 Send the command **202 - Set_Service_Hours_17520**.

15.12 Send the command **208 - Reset_SST_Errors**.

15.13 Send the command **726 - Eng_Comp_Freq**.

15.14 Send the command **715 - Set_Seatpad_LP_Threshold**.

15.15 Send the command **409 - Mute_Alarm**.

15.16 Send the command **407 - Load_Customer_Name**.

Note: *Before sending the command to the pump, either type in a new Customer Name or delete the old name and leave the parameter box empty.*

15.17 Send the command **A11 - Log_Clear_All**.

Note: *This will clear both the **Critical** and **Non Critical Event Logs** on the pump.*

15.18 Send the command **704 - Disable_Test_Mode**.

15.19 Switch off the mains/power supply to the pump.

16 Setting the GMT Time and Date

16.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

16.2 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Page 5, Section 5).

16.3 Run the Communicator software on the PC (Refer to Page 6, Section 6).

16.4 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.

16.5 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

16.6 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 25).

16.7 To connect the mains/power supply to the pump, do the following:

16.7.1 If the Serial Communications Pack is being used:

16.7.1.1 Plug in and switch on the mains/power supply to the pump.

16.7.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

16.7.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Page 12, Section 8).

16.8 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **MANUFACTURE** (Refer to Page 10, Section 7).

16.9 Send the command **304 - Set_GMT_Date**.

Note: *The values of the **Time** and **Date** parameters should already be set to the correct default values.*

16.10 Send the command **310 - Read_GMT_Date_and_Time**. Check that the date and time have been set correctly.

16.11 Switch off the mains/power supply to the pump.

17 Pressure Logging using the Communicator Software

This allows the service engineer to view real-time pressures on the three outlet ports of the pump using the Communicator software.

Note: *This is only a graphical representation of the pressures, and all pressure values are approximate. The graph should therefore be used for indication only.*

17.1 If you are operating the pump from a PC via the IR Interface Module, do **NOT** switch on the mains/power supply to the pump until instructed to do so.

17.2 Connect the pump to a mattress replacement, mattress overlay or seat cushion.

17.3 Connect the pump to a PC using either the Serial Communications Pack or the IR Interface Module (Refer to Page 5, Section 5).

17.4 Run the Communicator software on the PC (Refer to Page 6, Section 6).

17.5 Make sure that the top right of the dialog box shows the **File Version: SERS001-XX**, where "**XX**" is the version number, and must be "**02**" or higher.

17.6 Make sure **Auto Logic** is selected on the **Connection** drop-down menu, and the **Auto Logic Commands** menu is displayed.

17.7 Make sure the screen is maximised, so that the **TxRx** box can be viewed (Refer to Figure 25).

17.8 To connect the mains/power supply to the pump, do the following:

17.8.1 If the Serial Communications Pack is being used:

17.8.1.1 Plug in and switch on the mains/power supply to the pump.

17.8.1.2 The power-up BIST routine will run for approximately 20 seconds (Refer to Page 2, Section 3).

Note: *Do NOT press the **Run/Standby** button on the control panel during the power-up BIST routine.*

17.8.2 If the IR Interface Module is being used, carry out the procedure to connect the pump to the PC via the IR Interface Module (Refer to Page 12, Section 8).

17.9 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **ENGINEERING** (Refer to Page 10, Section 7).

17.10 Send the command **724 - Enable_Pressure_Logging**, to start the logging function.

17.11 Click on the **Logger** tab on the Communicator software.

17.12 Press the **Run/Standby** button on the top of the pump, to put the pump into **Run** mode.

17.13 The **Logger** screen will display real-time pressures on the three outlet ports of the pump (Refer to Figure 31).

17.14 To stop the logging function, do the following:

17.14.1 Press the **Run/Standby** button for two seconds to put the pump into **Standby**.

17.14.2 Click on the **Command List** tab on the Communicator software.

17.14.3 On the Communicator software, scroll through the menu of **Auto Logic Commands** to the section heading **ENGINEERING**.

17.14.4 Send the command **725 - Disable_Pressure_Logging**, to stop the logging function.

17.15 Switch off the mains/power supply to the pump.

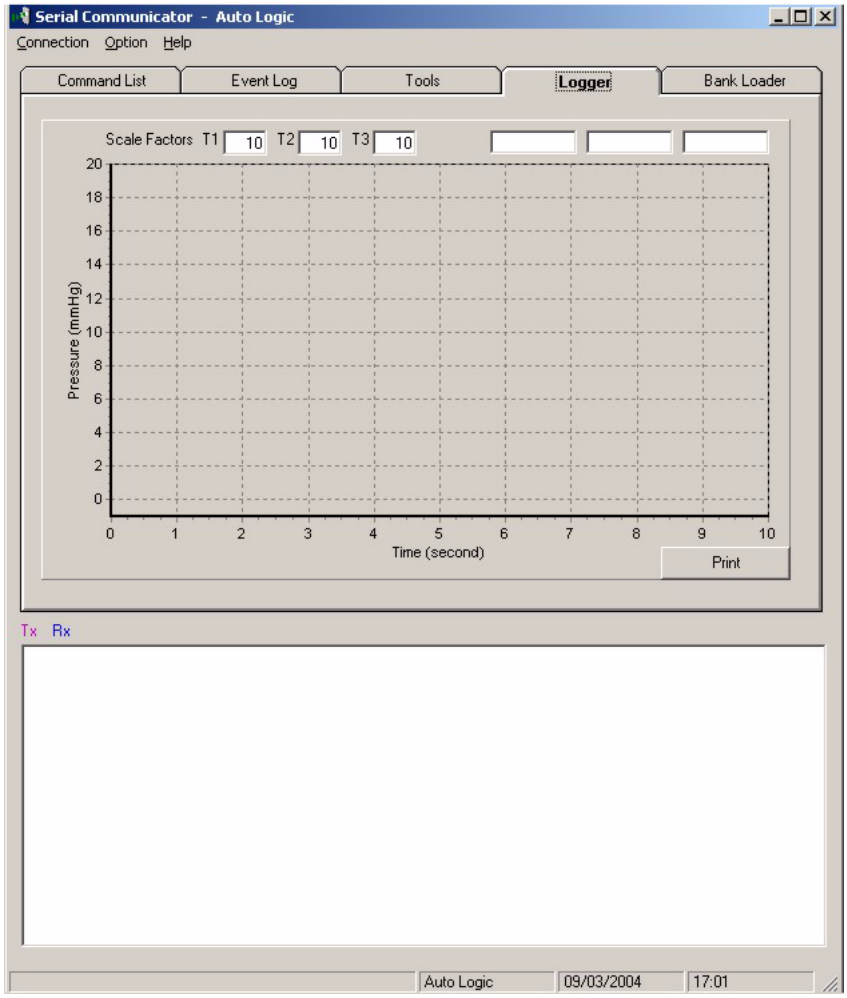


Figure 31 - Communicator Software - Logger Screen

18 Electrical Safety Testing

To test and calibrate the pump unit correctly, the test equipment in Table 6 is required.

Table 6 - Electrical Test Equipment

Item	Test Equipment
1	Insulation Resistance Tester (Megger), 500 Vdc
2	Portable Appliance Tester
3	Dielectric Strength Tester (Flash Tester), 3.0 kVac with current limit

Electrical Safety Checks - Class II (Double Insulated)

The following electrical safety checks must be carried out after breakdown repairs and servicing. Where alternatives are given, the test will depend upon the available test equipment.

- Insulation Resistance Test (Megger Test)
- Dielectric Strength (Flash Test)

Insulation Resistance Test

This test checks the integrity of the appliance's insulation. This test is applied between the live and neutral wires (connected together) and the appliance's enclosure.

Test Procedure

- 500 Vdc is applied to the insulation and the measured resistance must be greater than 2MΩ.

Note: *This test can be conducted using a Portable Appliance Tester.*

Dielectric Strength Test (Flash Test)

This test shows the response of the insulation to high a.c. voltage stress, indicates the effects of capacitive current, and gives an early warning of insulation problems which may develop in the appliance.

Leakage Circuit Test (USA)

This test measures the risk currents in accordance with the ANSI-AAMI ESI-1993 Standard (American National Standard Safe Current Limits for Electromedical Apparatus) or as specified in UL 2601-1).

WARNING: DANGER OF ELECTRIC SHOCK. DO NOT TOUCH ANY EXPOSED PARTS WHILE CONDUCTING THIS TEST. DO NOT TOUCH ANY PART OF YOUR BODY WITH THE CONTACTS OF THE PROBES.

WARNING: THIS EQUIPMENT SHOULD NOT BE USED IF YOU HAVE A HEARING AID OR PACEMAKER FITTED, DUE TO THE POSSIBILITY OF ELECTROMAGNETIC DISTURBANCE.

CAUTION: The voltage levels used for this test, may stress and weaken the insulation. This test is therefore not recommended as a routine test. It should be only used after a major assembly/disassembly has been completed.

Test Procedure

- 3 kVac is applied between the live and neutral wires (connected together) and the appliance's non-earthed enclosure. No breakdown should occur.

19 Inflation Test of the Mattress Replacement, Overlay or Seat Cushion

This procedure must be carried out after a service or major repair of the mattress replacement, mattress overlay or seat cushion.

To test the mattress replacement, mattress overlay or seat cushion correctly, the test equipment in Table 7 is required.

Table 7 - Mattress Replacement, Overlay and Seat Cushion Inflation Test Equipment

Item	Test Equipment
1	Flow / Pressure Rig, 3-26 ltr/min
2	Portable Inflation Test Unit
3	Stopwatch

Test Procedure

19.1 Connect a portable inflation test unit to the mattress replacement, mattress overlay or seat cushion.

19.2 Fully inflate one bank of cells on the mattress replacement, mattress overlay or seat cushion, and connect them to a pressure/flow meter.

19.3 Test the bank of cells to the requirements detailed in Table 8.

Table 8 - Inflation Test Requirements

Parameter	Value
Inflation test pressure:	80 - 90 mmHg
Inflation stabilisation period:	30 seconds
Inflation test period:	3 minutes
Leak rate:	Must not exceed 3 mmHg

19.4 Repeat Paras 19.2 and 19.3 for the remaining bank(s) of cells on the mattress replacement, mattress overlay or seat cushion.

19.5 If the mattress replacement, mattress overlay or seat cushion fails any of the tests, do the following:

19.5.1 Investigate as to the reason why.

19.5.2 Repair any faults in accordance with the following:

- Mattress Replacement: Refer to Chapter 6 “Mattress Overlay Repair” and Chapter 7 “Mattress Base Pad Repair”.
- Mattress Overlay: Refer to Chapter 6 “Mattress Overlay Repair”.
- Seat Cushion: Refer to Chapter 8 “Seat Cushion Repair”.

19.5.3 Repeat the above test procedure to re-test the mattress replacement, mattress overlay or seat cushion after the repair (Refer to Page 29, Section 19).

CHAPTER 5

PUMP REPAIR

1 General

This chapter details repair procedures for the **Auto Logic** pump. All repairs should be carried out by Huntleigh approved service personnel.

2 Pump Repair to Testing Requirements

Table 9 defines the test requirements which must be carried out on the pump following certain repairs:

Note: *You must carry out the Basic System Operation after **ALL** repairs (Refer to Chapter 4 "Testing", Page 2, Section 3.*

2.1 To Check the Pump Pressures and Flows, refer to:

- Chapter 4 "Testing", Page 14, Section 10 if a PC and Communicator software is used.
- Chapter 4 "Testing", Page 2, Section 4 if a PC and Communicator software is ***NOT*** used.

2.2 To Check the Transducer Calibration, refer to Chapter 4 "Testing", Page 17, Section 11.

2.3 To Set the Service Hours, refer to Chapter 4 "Testing", Page 22, Section 13.

2.4 To Set Up the Control PCB Assembly, refer to Chapter 4 "Testing", Page 24, Section 15.

2.5 To Set the Time and Date, refer to Chapter 4 "Testing", Page 25, Section 16.

2.6 To carry out the Electrical Safety Tests, refer to Chapter 4 "Testing", Page 28, Section 18.

Table 9 - Repair to Testing Requirements

Components / Assemblies	Check Pressures and Flows	Check Transducer Calibration	Set Service Hours	Control PCB Setup	Set Time/ Date	Electrical Safety Tests
Compressor Assembly	Yes	Yes	Yes	No	No	Yes
Manifold Assembly	Yes	Yes	Yes	No	No	Yes
Control PCB Assembly	Yes	Yes	Yes	Yes	Yes	Yes
Power Supply PCB Assy	Yes	Yes	No	No	No	Yes
Membrane Label	No	No	No	No	No	Yes
Front Case	Yes	No	No	No	No	Yes
Rear Case	No	No	No	No	No	Yes
Silencer Bag & Tubes	No	No	No	No	No	No
Air Filters	No	No	No	No	No	No
Hooks	No	No	No	No	No	No
Battery on Control PCB	No	No	No	No	Yes	Yes
Power Supply PCB Fuses	No	No	No	No	No	Yes
Mains/Power Cordset	No	No	No	No	No	Yes

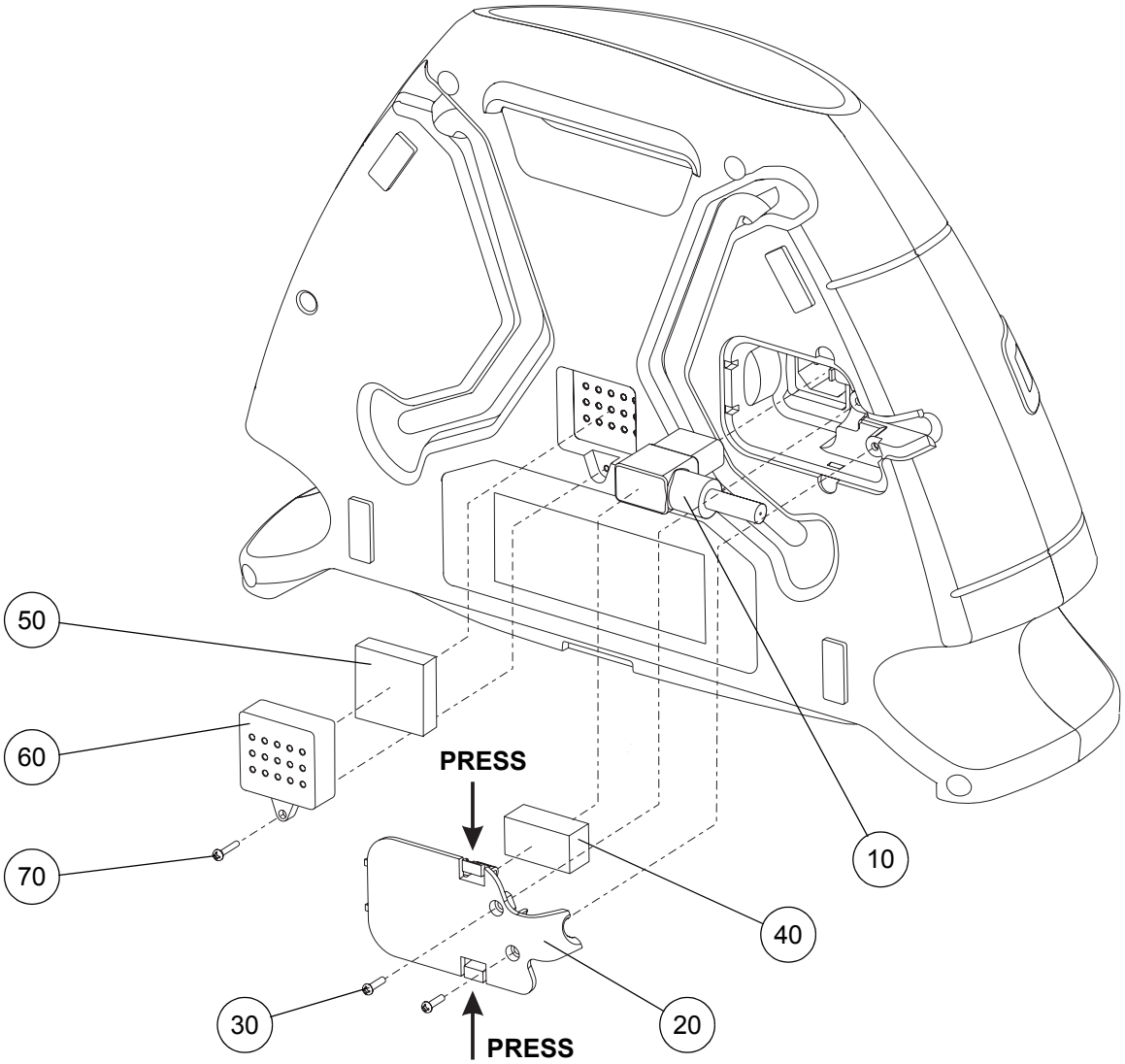


Figure 32 - Replacing the Mains/Power Cordset and Air Inlet Filter

Table 10 - Mains/Power Cordset and Air Inlet Filter Parts List

Item	Part Number	Description	Qty
10	630415	Mains/Power Cordset, 6m Coiled (UK)	1
-	630416	Mains/Power Cordset, 6m Coiled (Euro)	1
-	630417	Mains/Power Cordset, 6m Coiled (USA)	1
20	630329	IEC Connector Cover	1
30	FAS223	Screw, 3 dia x 10 Pan Head	2
40	BP044	Pad	1
50	507374	Air Inlet Filter Felt	1
60	630326	Filter Cover	1
70	FAS145	Screw, 3 dia x 8 Pan Head	1

3 Removing the Mains/Power Cordset

WARNING: BEFORE REPLACING THE MAINS/POWER CORDEST, MAKE SURE THE PUMP UNIT HAS BEEN ISOLATED FROM THE MAINS/POWER SUPPLY BY REMOVING THE MAINS/POWER PLUG FROM THE WALL SOCKET.

Note: *The pump has a fail-safe design, which means that if the rear case is removed with the mains/ power cordset still connected to the pump, the mains/power cordset connector will be automatically removed with the rear case, and so the mains/power will be immediately disconnected from the pump.*

3.1 Lay the pump face down on a flat surface.

3.2 Remove the two screws (Fig 32, Item 30) from the IEC connector cover (Fig 32, Item 20) on the rear case.

3.3 Press the two retaining clips together on the top and bottom of the IEC connector cover to release it from the rear case (Refer to Figure 32), and lift the IEC connector cover out of the rear case.

3.4 Pull the IEC cordset connector (Fig 32, Item 10) out of the IEC connector inside the pump.

4 Installing the Mains/Power Cordset

CAUTION: Make sure the replacement mains/power cordset (Fig 32, Item 10) is the correct type and rating, or the electrical safety of the pump may be impaired.

4.1 Carefully push the IEC cordset connector (Fig 32, Item 10) fully into the IEC connector inside the pump. Place the cable into the cutout in the side of the rear case.

4.2 Make sure the pad (Fig 32, Item 40) is stuck onto the inside of the IEC connector cover (Fig 32, Item 20).

4.3 Engage the two spigots on the left side of the IEC connector cover into the cutouts in the rear case. Make sure the cable is still in the cutout in the side of the rear case, and press the IEC connector cover down firmly until the two retaining clips on the top and bottom of the cover click into position in the rear case.

4.4 Install the two screws (Fig 32, Item 30) through the IEC connector cover into the rear case. Tighten the screws to secure the cable.

Note: *Do not over-tighten the screws, or you may strip the threads in the rear case.*

5 Removing the Air Inlet Filter

5.1 Lay the pump face down on a flat surface.

5.2 Remove the screw (Fig 32, Item 70), the filter cover (Fig 32, Item 60) and the air inlet filter felt (Fig 32, Item 50) out of the rear case.

6 Installing the Air Inlet Filter

6.1 Put the new air inlet filter felt (Fig 32, Item 50) into the back of the filter cover (Fig 32, Item 60).

6.2 Put the filter cover and air inlet filter felt into the slot in the rear case.

6.3 Install the screw (Fig 32, Item 70) to secure the filter cover.

Note: *Do not over-tighten the screw, or you may strip the thread in the rear case.*

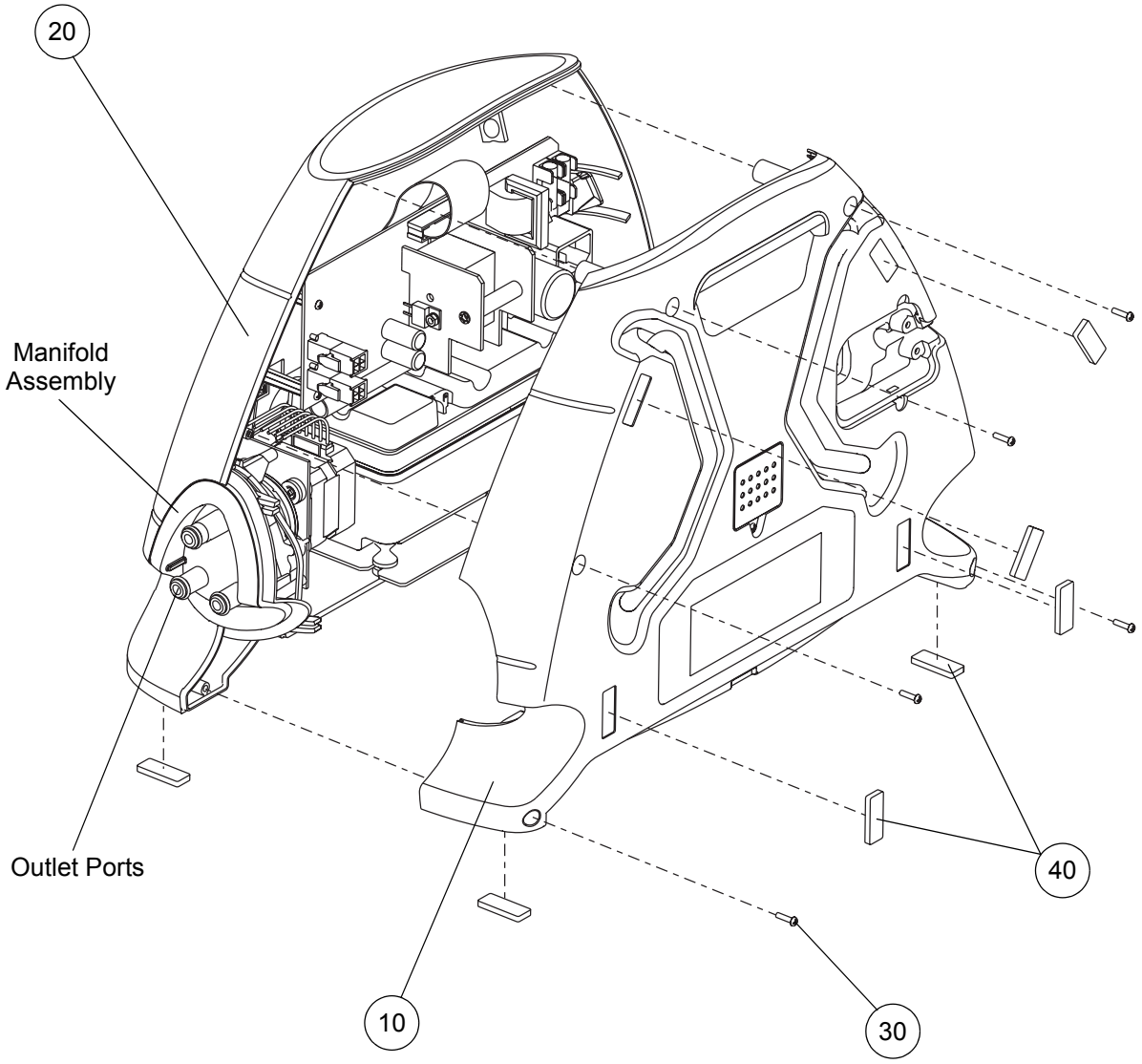


Figure 33 - Removing the Rear Case

Table 11 - Front Case and Rear Case Parts List

Item	Part Number	Description	Qty
10	630321	Rear Case (Moulding only)	1
20	630320	Front Case (Moulding only)	1
30	FAS225	Screw, 3 dia x 16 Pan Head	5
40	507413	Rubber Foot	8

7 Removing the Rear Case

7.1 Remove the mains/power cordset from the pump (Refer to Page 3, Section 3).

7.2 Lay the pump face down on a flat surface.

7.3 Remove the four screws (Fig 33, Item 30) and lift the rear case (Fig 33, Item 10) away from the front case (Fig 33, Item 20).

8 Installing the Rear Case

8.1 Lay the front case (Fig 33, Item 20) down with the inside surface pointing upwards.

8.2 Carefully lift the inner end of the manifold assembly, so that the outer face of the manifold assembly is flush with the side of the front case (Refer to Figure 33).

8.3 Hold the manifold assembly by the three outlet ports in that position, and install the rear case (Fig 33, Item 10) onto the front case (Refer to Figure 33).

Note: *The position of the manifold assembly may have to be adjusted slightly as the rear case is installed, so that the outer face of the manifold assembly remains flush with the sides of the front and rear cases.*

8.4 Install the four screws (Fig 33, Item 30) to secure the rear case to the front case.

8.5 Install the mains/power cordset to the pump (Refer to Page 3, Section 4).

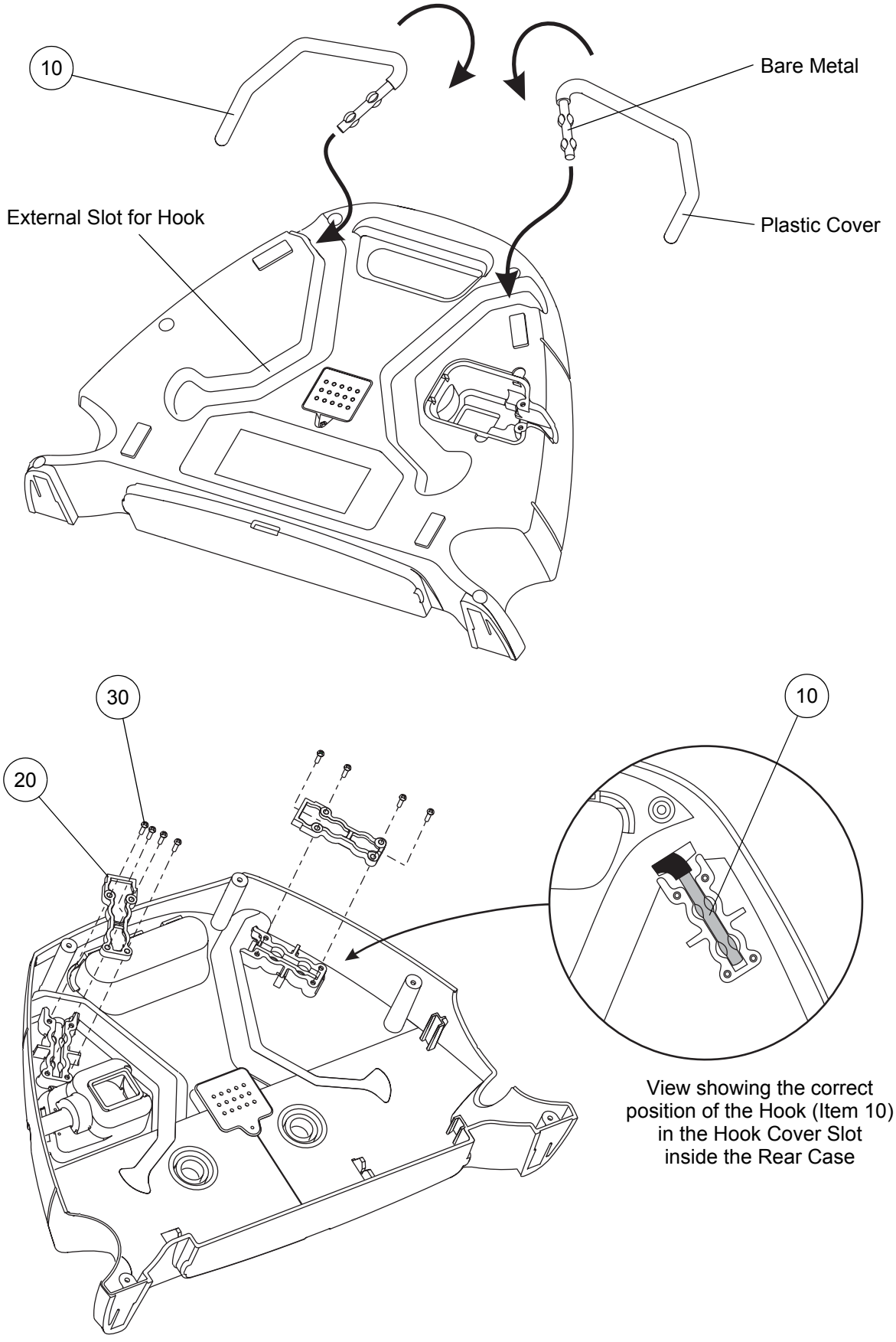


Figure 34 - Replacing the Hooks

9 Removing the Hooks

9.1 Remove the rear case from the front case (Refer to Page 5, Section 7).

9.2 Lay the rear case down with the inside surface pointing upwards.

9.3 Remove the 8 screws (Fig 34, Item 30) and two hook covers (Fig 34, Item 20) from the rear case.

9.4 Turn the rear case over so that the outside surface is pointing upwards, and remove the two hooks (Fig 34, Item 10) from the rear case.

Note: *It is easier to remove the hooks if they are first rotated so that they hang over the side of the rear case (Refer to Figure 34).*

10 Installing the Hooks

10.1 Lay the rear case down with the outside surface pointing upwards.

10.2 Put the two hooks (Fig 34, Item 10) in position, with the bare-metal end by the hole in the rear case and the plastic-covered end hanging over the side of the rear case (Refer to Figure 34).

10.3 Lift and rotate each hook, and carefully insert the bare-metal end of the hook through the hole in the rear case.

10.4 Rotate the hooks so that they lie flat in the external slots on the outside of the rear case.

Note: *If the hooks are not inserted far enough into the rear case, they will not lie flat in the slots.*

10.5 Hold the two hooks in their external slots, and turn the rear case over so that the inside surface is pointing upwards.

10.6 Make sure that the each hook is in the correct position in its hook cover slot inside the rear case (Refer to Figure 34).

10.7 Install the eight screws (Fig 34, Item 30) and two hook covers (Fig 34, Item 20) onto the rear case. Tighten the screws to secure the hooks.

Note: *Do not over-tighten the screws, or you may strip the threads in the rear case.*

10.8 Make sure the hooks:

- Rotate freely.
- Lie flat in the external slots on the rear case.

10.9 Install the rear case onto the front case (Refer to Page 5, Section 8).

Table 12 - Hook Parts List

Item	Part Number	Description	Qty
10	630315	Hook	2
20	630325	Hook Cover	2
30	FAS225	Screw, 3 dia x 16 Pan Head	8

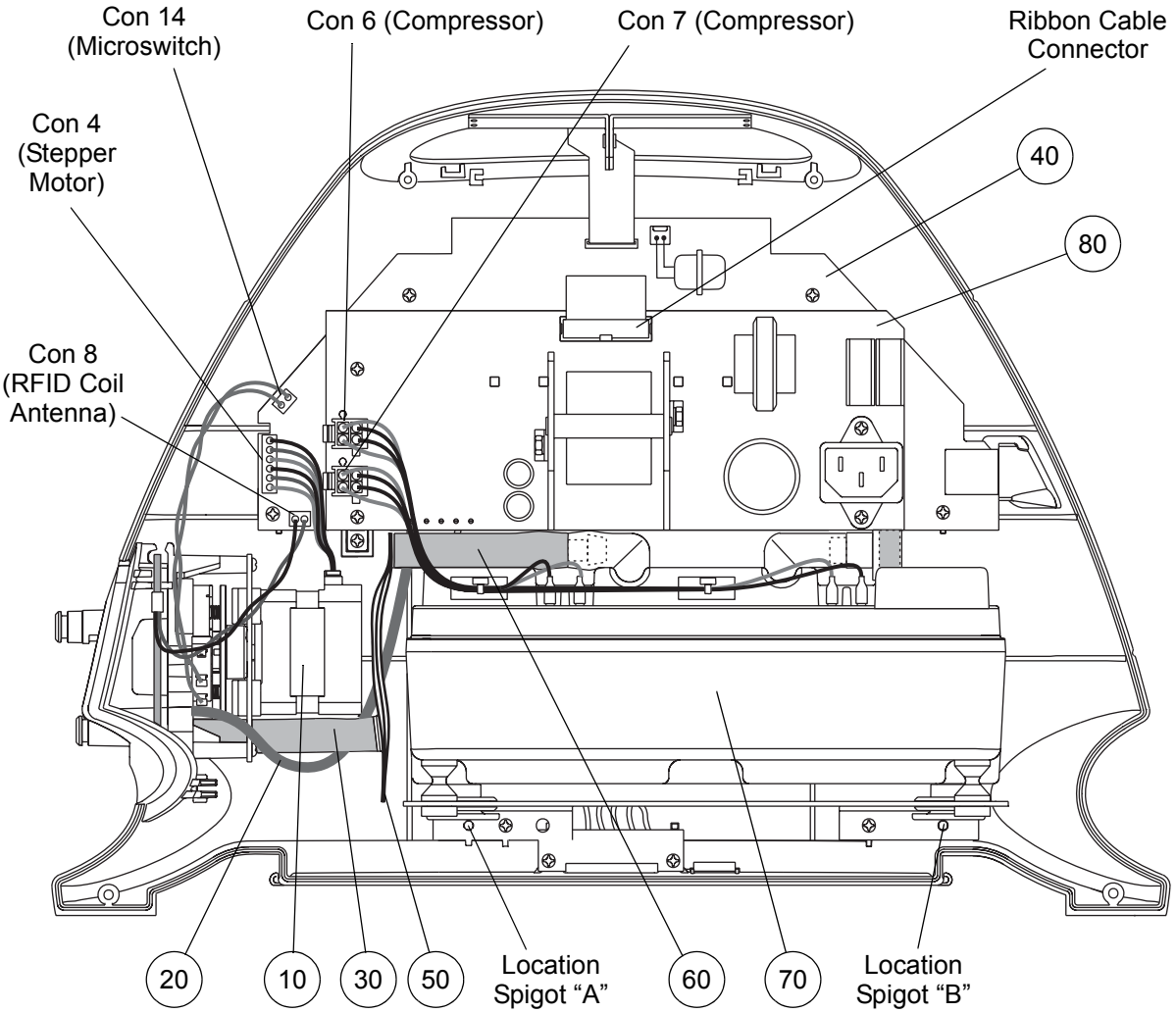


Figure 35 - Replacing the Manifold Assembly

Table 13 - Manifold Assembly Parts List

Item	Part Number	Description	Qty
10	630100	Manifold Assembly (including RFID Coil Antenna), Spares Item	1
20	REF	Tube, Manifold Assembly - Control PCB Transducer	1
30	630349	Tube, Manifold Assembly - Silencer Bag Assembly	1
40	630400	Control PCB (Printed Circuit Board) Assembly	1
50	151098	Silencer Bag Assembly	1
60	630334	Tube, Compressor Assembly - Silencer Bag Assembly	1
70	509051	Compressor Assembly, Series 6, 5.5V 50/60Hz	1
80	507058	Power Supply PCB (Printed Circuit Board) Assembly	1

11 Removing the Manifold Assembly

The manifold assembly spares item (Fig 35, Item 10) includes the RFID coil antenna.

11.1 Remove the rear case from the front case (Refer to Page 5, Section 7).

11.2 Lay the front case down with the inside surface pointing upwards.

11.3 Disconnect the following cable connectors from the control PCB assembly (Fig 35, Item 40):

- To the manifold assembly, stepper motor (Fig 35, PCB Con 4).
- To the manifold assembly, RFID coil antenna (Fig 35, PCB Con 8).
- To the manifold assembly, microswitch (Fig 35, PCB Con 14).

11.4 Disconnect the following tubes from the back of the manifold assembly:

- The large diameter tube (Fig 35, Item 30) to the silencer bag assembly.
- The small diameter tube (Fig 35, Item 20) to the transducer on the control PCB assembly.

CAUTION: Do not disconnect the transducer tube from the transducer on the control PCB assembly. The transducer is a sensitive device and is easily damaged.

11.5 Lift the manifold assembly (Fig 35, Item 10) out of the front case.

12 Installing the Manifold Assembly

12.1 Lay the front case down with the inside surface pointing upwards.

12.2 Before installing the manifold assembly (Fig 35, Item 10), check the following parts are installed correctly on it (Refer to Figure 36):

12.2.1 The 6-way cable connector is pushed fully onto the stepper motor connector.

12.2.2 The connectors on the two red wires are pushed fully onto the microswitch terminals.

Note: *Make sure the red wire connectors are installed on the correct microswitch terminals - there is a third unused terminal on the microswitch. The two red wires are interchangeable.*

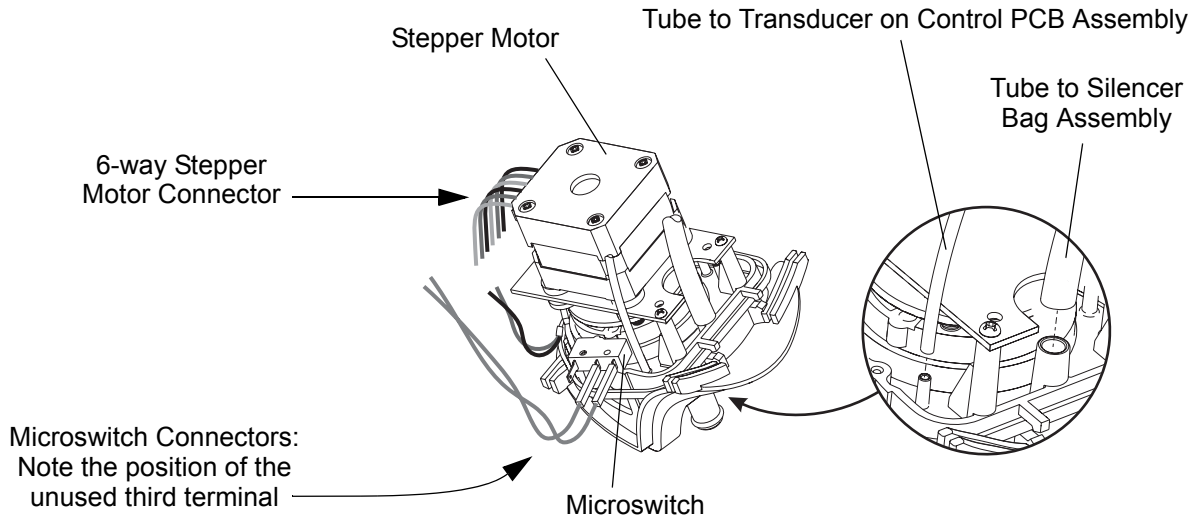

Stepper Motor
Tube to Transducer on Control PCB Assembly
Tube to Silencer Bag Assembly
6-way Stepper Motor Connector
Microswitch Connectors: Note the position of the unused third terminal
Microswitch

Figure 36 - Electrical and Pneumatic Connections to the Manifold Assembly

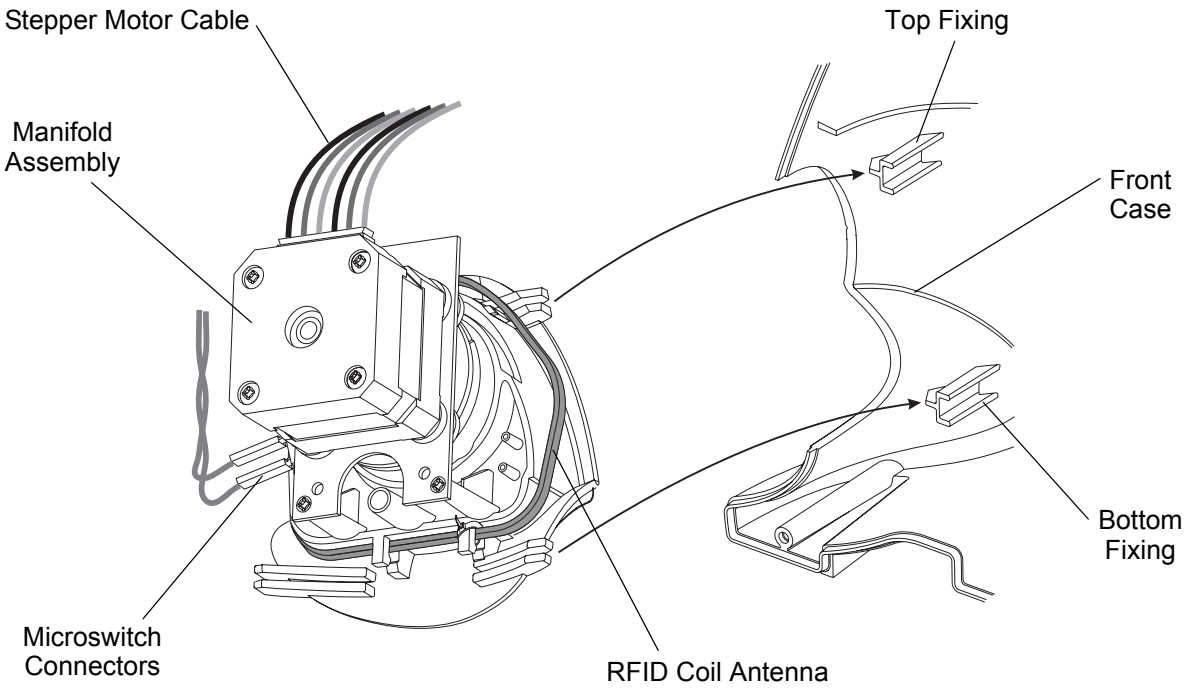


Figure 37 - Installing the Manifold Assembly

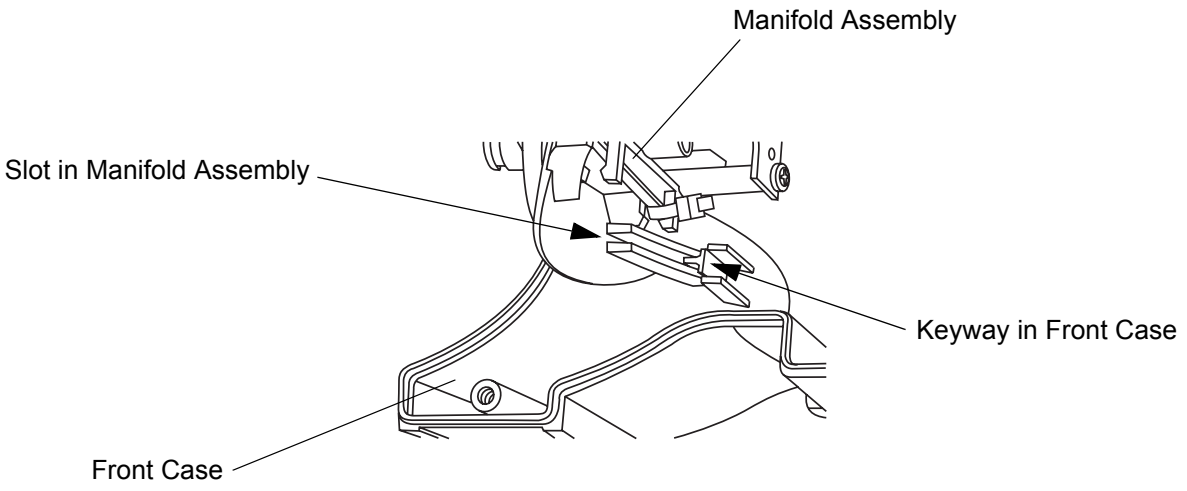


Figure 38 - Location of the Manifold Assembly in the Front Case

12.3 Install the manifold assembly into the cutout in the side of the front case. The manifold assembly is held in position by the top and bottom fixings (Refer to Figure 37).

Note: *For each fixing, put the keyway in the front case into the slot in the manifold assembly (Refer to Figure 38).*

Note: *Do not damage the antenna during the installation (Refer to Figure 37).*

12.4 Connect the following tubes onto the outlets on the back of the manifold assembly (Refer to Figure 36):

- Large diameter tube (Fig 35, Item 30) from the silencer bag assembly.
- Small diameter tube (Fig 35, Item 20) from the transducer on the control PCB assembly.

12.5 Make sure the small diameter transducer tube is pushed fully onto the top outlet on the transducer on the control PCB assembly (Refer to Figure 47).

CAUTION: Do not handle the transducer on the control PCB assembly unnecessarily. The transducer is a sensitive device. To avoid damage, put your finger at the back of the transducer while you push the transducer tube onto the top outlet at the front of the transducer.

12.6 Connect the following cable connectors onto the control PCB assembly (Fig 35, Item 40):

- From the manifold assembly, stepper motor (Fig 35, PCB Con 4).
- From the manifold assembly, RFID coil antenna (Fig 35, PCB Con 8).
- From the manifold assembly, microswitch (Fig 35, PCB Con 14).

12.7 Make sure the manifold assembly is still held in position by the top and bottom fixings (Refer to Figure 37), and install the rear case onto the front case (Refer to Page 5, Section 8).

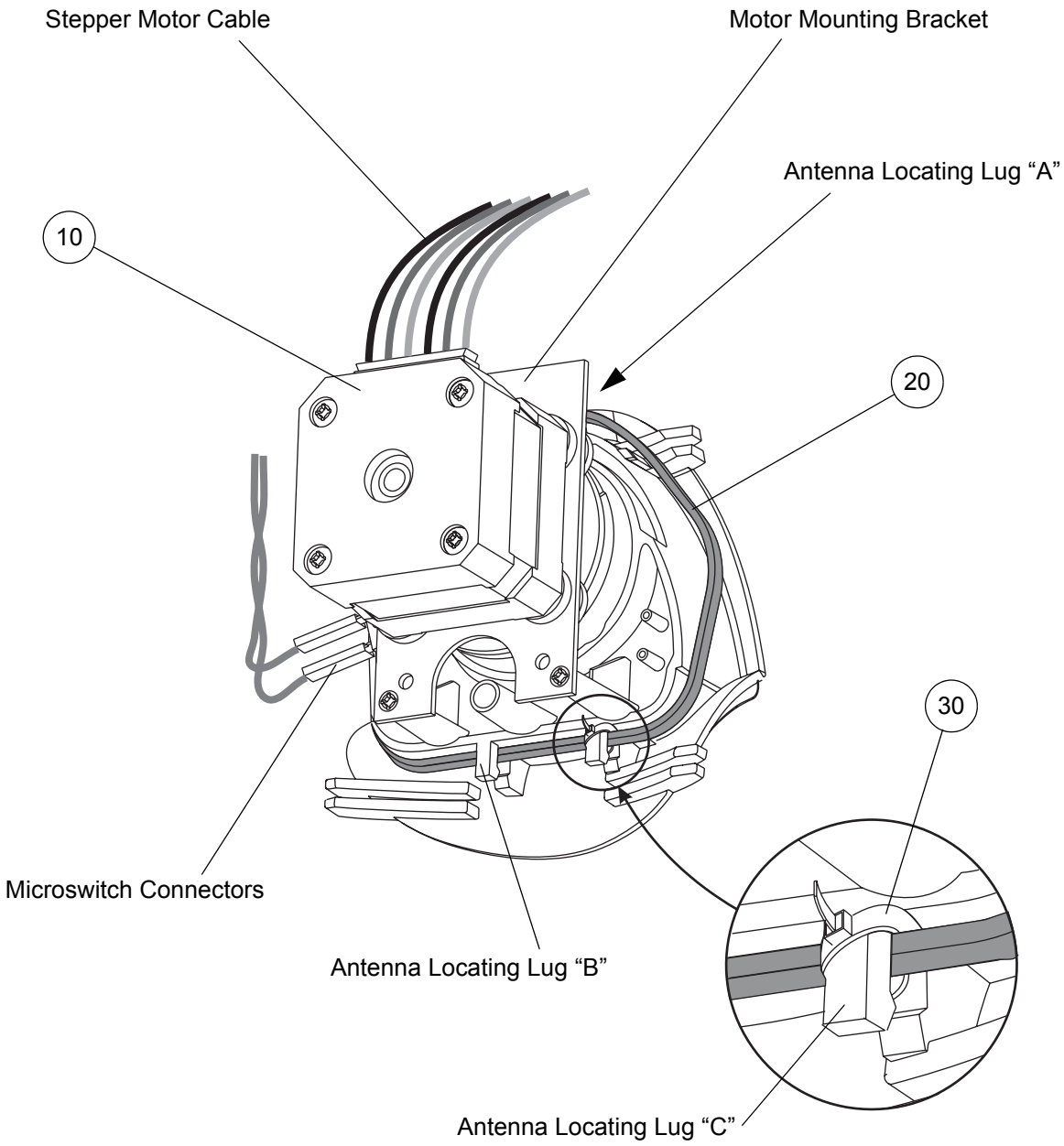


Figure 39 - Replacing the RFID Coil Antenna

Table 14 - RFID Coil Antenna Parts List

Item	Part Number	Description	Qty
10	630100	Manifold Assembly (including RFID Coil Antenna), Spares Item	1
20	630055	RFID Coil Antenna, Long	1
30	BP196	Cable Tie	1

13 Replacing the RFID (Radio Frequency Identification) Coil Antenna

CAUTION: Handle the RFID coil antenna with extreme care. The flying lead connection onto the RFID coil antenna is easily damaged.

13.1 Remove the manifold assembly from the pump (Refer to Page 9, Section 11).

13.2 Remove the two red wire connectors from the microswitch terminals on the manifold assembly (Refer to Figure 39).

13.3 Cut and remove the single cable tie (Fig 39, Item 30). This secures the RFID coil antenna (Fig 39, Item 20) to the antenna locating lug **C** (Refer to Figure 39).

Note: *Make sure you do not damage the antenna locating lug **C**.*

13.4 By carefully manoeuvring the RFID coil antenna, remove it from the three antenna locating lugs **A**, **B** and **C**, which retain the RFID coil antenna in position on the manifold assembly.

Note: *It is usually easier if the RFID coil antenna is removed first from the single antenna locating lug **A** at the top of the manifold assembly.*

13.5 Carefully manoeuvre the RFID coil antenna over the motor mounting bracket, around the stepper motor cable and off of the manifold assembly.

13.6 Carry out a continuity test on the new RFID coil antenna (Fig 39, Item 20), as follows:

13.6.1 Measure the resistance between the pins on the 2-way connector at the end of the flying lead on the RFID coil antenna.

13.6.2 If there is a very low resistance, the new RFID coil antenna is acceptable and can be installed onto the manifold assembly.

13.6.3 If there is a high resistance, then the new RFID coil antenna is damaged and should be discarded.

13.7 Position the new RFID coil antenna on top of the manifold assembly, with the flying lead on the RFID coil antenna adjacent to the microswitch on the manifold assembly.

13.8 Carefully manoeuvre the RFID coil antenna around the stepper motor cable and over the motor mounting bracket on the manifold assembly.

13.9 By carefully manoeuvring the RFID coil antenna, install it over the three antenna locating lugs **A**, **B** and **C**, to retain the RFID coil antenna in position on the manifold assembly.

Note: *It is usually easier if the RFID coil antenna is installed first over the two antenna locating lugs **B** and **C** at the bottom of the manifold assembly.*

13.10 Install a new cable tie (Fig 39, Item 30) over the RFID coil antenna and the antenna locating lug **C** (Refer to Figure 39).

Note: *If antenna locating lug **C** is damaged, install the cable tie over antenna locating lug **B**.*

13.11 Connect the two red wire connectors onto the microswitch terminals on the manifold assembly (Refer to Figures 36 and 39).

Note: *Make sure the red wire connectors are installed on the correct microswitch terminals - there is a third unused terminal on the microswitch. The two red wires are interchangeable.*

13.12 Make sure the 6-way cable connector is pushed fully onto the stepper motor connector.

13.13 Carry out a second continuity test on the RFID coil antenna, as detailed in Para 13.6.

13.14 Install the manifold assembly to the pump (Refer to Page 9, Section 12).

14 Removing the Silencer Bag Assembly

14.1 Remove the manifold assembly from the pump (Refer to Page 9, Section 11).

14.2 Remove the manifold assembly tube (Fig 35, Item 30) from the silencer bag assembly (Fig 35, Item 50).

Note: *This tube was previously connected to the manifold assembly (Fig 35, Item 10).*

14.3 Remove the silencer bag assembly from the compressor assembly tube (Fig 35, Item 60).

Note: *Leave the compressor assembly tube connected to the compressor assembly.*

15 Installing the Silencer Bag Assembly

15.1 Install the spigot of the new silencer bag assembly (Fig 35, Item 50) onto the compressor assembly tube (Fig 35, Item 60).

Note: *Make sure the orientation of the silencer bag is as shown in Figure 40.*

15.2 Install the manifold assembly tube (Fig 35, Item 30) onto the other spigot on the silencer bag assembly.

Note: *Make sure the spigots on the silencer bag assembly are pushed fully into the tubes.*

15.3 Install the manifold assembly to the pump (Refer to Page 9, Section 12).

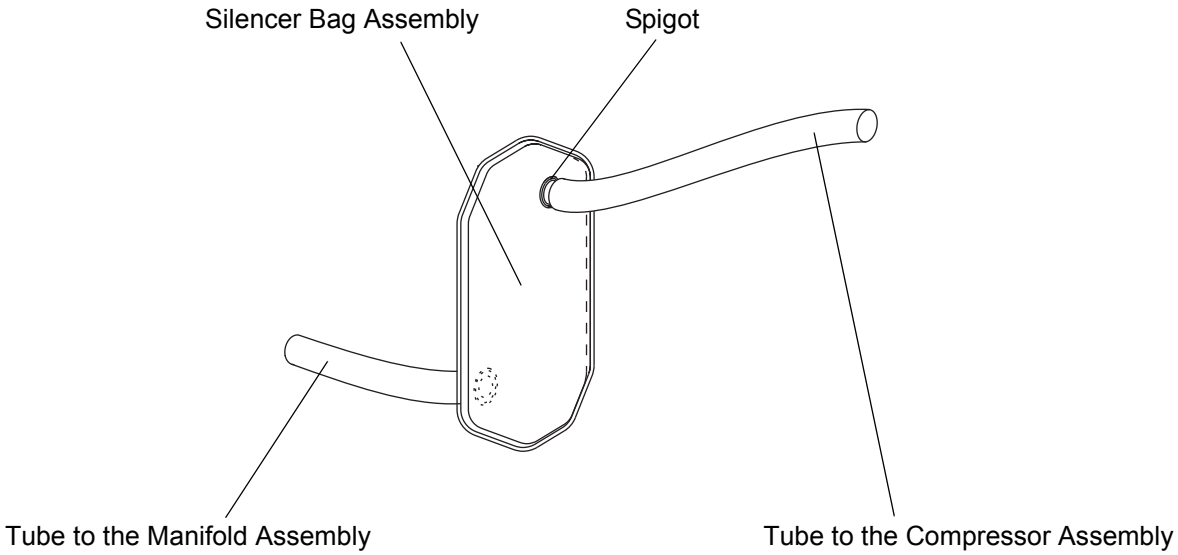


Figure 40 - Silencer Bag Assembly Orientation

16 Replacing the O-Rings on the Manifold Assembly

Note: *The O-rings can be replaced without opening the pump.*

16.1 Using a flat-bladed screwdriver, remove the three O-rings (Fig 41, Item 10) from the outlet ports on the manifold assembly (Fig 41, Item 20).

16.2 Carefully push the three new O-rings (Fig 41, Item 10) onto the outlet ports on the manifold assembly.

Note: *Make sure each O-ring is located centrally in the slot at the outer end of the outlet port.*

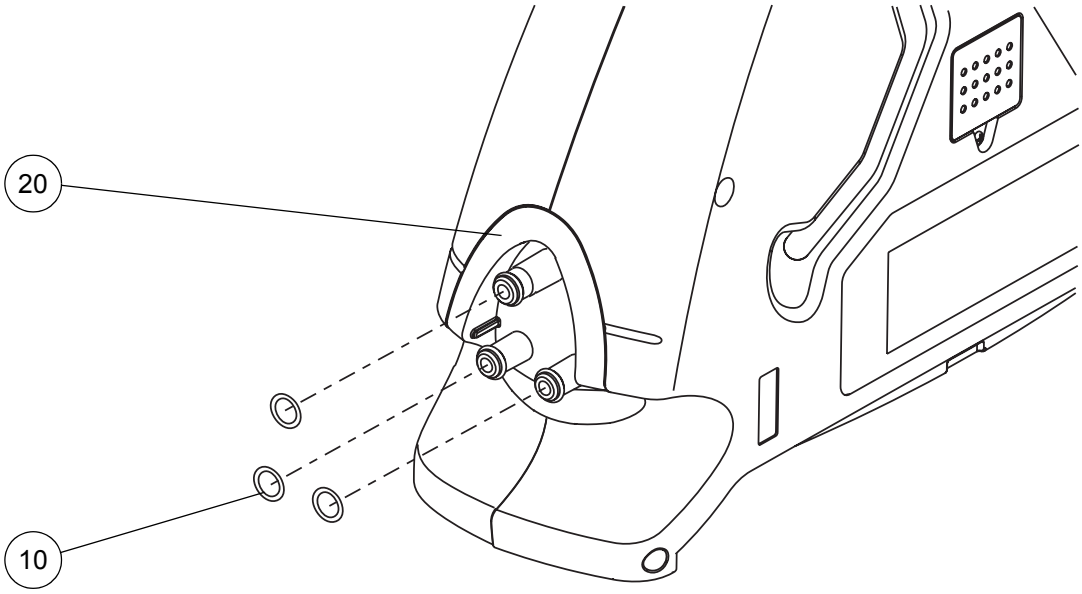


Figure 41 - Replacing the O-Rings on the Manifold Assembly

Table 15 - Manifold Assembly O-Ring Parts List

Item	Part Number	Description	Qty
10	630364	O-Ring, 6.8mm dia	3
20	630100	Manifold Assembly (including RFID Coil Antenna), Spares Item	1

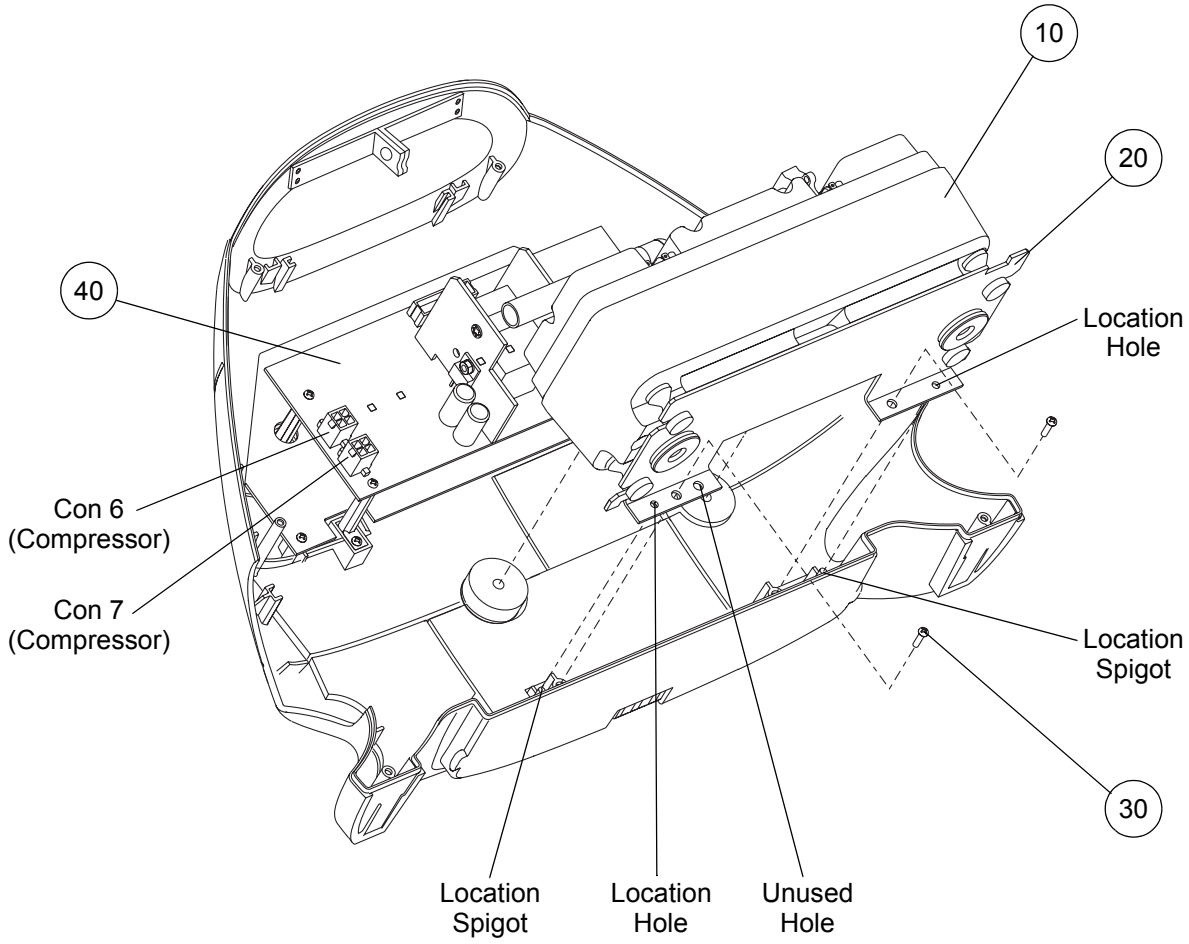


Figure 42 - Replacing the Compressor Assembly and Mounting Bracket

Table 16 - Compressor Assembly and Mounting Bracket

Item	Part Number	Description	Qty
10	509051	Compressor Assembly, Series 6, 5.5V 50/60Hz	1
20	507316	Compressor Mounting Bracket	1
30	FAS218	Screw, 4mm dia x 12 Pan Head	2
40	507058	Power Supply PCB (Printed Circuit Board) Assembly	1

17 Removing the Compressor Assembly and Mounting Bracket

17.1 Remove the manifold assembly from the pump (Refer to Page 9, Section 11).

17.2 Remove the silencer bag assembly from the large diameter tube on the top of the compressor assembly (Refer to Page 14, Section 14).

17.3 Disconnect the two compressor cable connectors (Fig 42, PCB Con 6 and 7) from the power supply PCB assembly (Fig 42, Item 40).

17.4 Remove the two screws (Fig 42, Item 30), and lift the compressor assembly and mounting bracket (Fig 42, Items 10 and 20) out of the front case.

Note: *The large diameter tube to the silencer bag assembly tube remains connected to the compressor assembly.*

18 Installing the Compressor Assembly and Mounting Bracket

Note: *Refer to Figure 35 for a view of the completed installation of the compressor assembly and mounting bracket in the pump.*

18.1 Before installing the compressor assembly and mounting bracket (Fig 42, Items 10 and 20), check the following parts are installed correctly on it:

18.1.1 The air inlet filter and air inlet filter holder.

18.1.2 The large diameter tube (to the silencer bag assembly, Fig 35, Item 60).

18.1.3 The eight crimp connectors (to the power supply PCB assembly, Fig 35, PCB Con 6 and 7).

18.2 Put the compressor assembly and mounting bracket into the front case.

Note: *Make sure the two locating holes at the outer ends of the mounting bracket are installed over the corresponding location spigots "A" and "B" in the front case (Refer to Figures 35 and 42).*

Note: *Make sure the wires from the power supply PCB assembly to the battery pack connector do not lie on top of the circular compressor support rubbers (Refer to Figure 46).*

18.3 Install the two screws (Fig 42, Item 30) through the mounting bracket (Fig 42, Item 30) and into the front case.

Note: *One hole in the left side of the mounting bracket is not used (Refer to Figure 42).*

18.4 Connect the two compressor cable connectors (Fig 35, PCB Con 6 and 7 and Fig 42, PCB Con 6 and 7) onto the power supply PCB assembly (Fig 42, Item 40).

18.5 Install the silencer bag assembly onto the compressor assembly tube (Refer to Page 14, Section 15).

18.6 Install the manifold assembly into the pump (Refer to Page 9, Section 12).

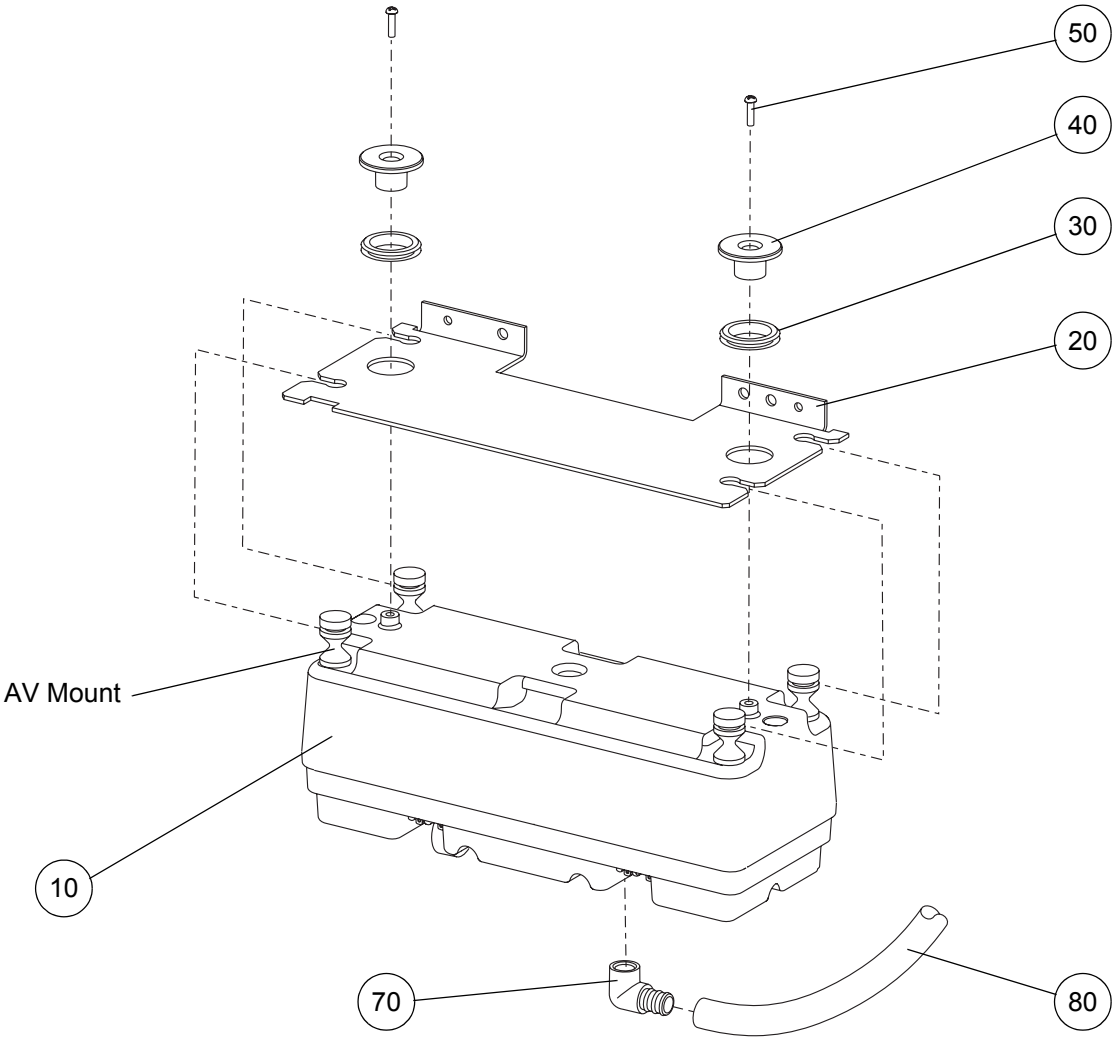


Figure 43 - Removing the Compressor Assembly from the Mounting Bracket

Table 17 - Compressor Assembly and Mounting Bracket Parts List

Item	Part Number	Description	Qty
10	509051	Compressor Assembly, Series 6, 5.5V 50/60Hz	1
20	507316	Compressor Mounting Bracket	1
30	507380	Compressor Bracket Grommet	2
40	507317	Compressor Bump Stop	2
50	FAS223	Screw, 3 dia x 10 Pan Head	2
60	630335	Elbow	1
70	630334	Tube, Compressor Assembly - Silencer Bag Assembly	1

19 Removing the Compressor Assembly from the Mounting Bracket

19.1 Remove the compressor assembly and mounting bracket (together with the tube to the silencer bag assembly) from the pump (Refer to Page 17, Section 17).

19.2 Lay the compressor assembly (Fig 43, Item 10) and mounting bracket (Fig 43, Item 20) down with the mounting bracket on top (Refer to Figure 43).

19.3 Remove the two screws (Fig 43, Item 50) and compressor bump stops (Fig 43, Item 40) from the compressor assembly (Fig 43, Item 10) and mounting bracket (Fig 43, Item 20).

19.4 The compressor assembly is still attached to the mounting bracket via the four anti-vibration (AV) mounts. Separate the compressor assembly (together with the tube to the silencer bag assembly) from the mounting bracket, as follows (Refer to Figures 43 and 44):

19.4.1 Start at one corner of the compressor assembly.

19.4.2 Hold the compressor assembly, and push the mounting bracket in towards the centre of the compressor assembly.

19.4.3 At the same time, carefully push the AV mount in the opposite direction and out of the slot in the mounting bracket.

19.4.4 Repeat for the other three corners of the compressor assembly.

20 Installing the Compressor Assembly onto the Mounting Bracket

20.1 Lay the compressor assembly (Fig 43, Item 10) down with the AV mounts on top, and the two cables to the power supply PCB assembly at the front (Refer to Figure 44).

20.2 Lay the mounting bracket (Fig 43, Item 20) on top of the compressor assembly, with the angled part of the mounting bracket on top and at the back of the compressor assembly (Refer to Figure 44).

20.3 At one end of the compressor assembly, carefully push the grooved part of the two AV mounts into the slots in the mounting bracket (Refer to Figures 43 and 44).

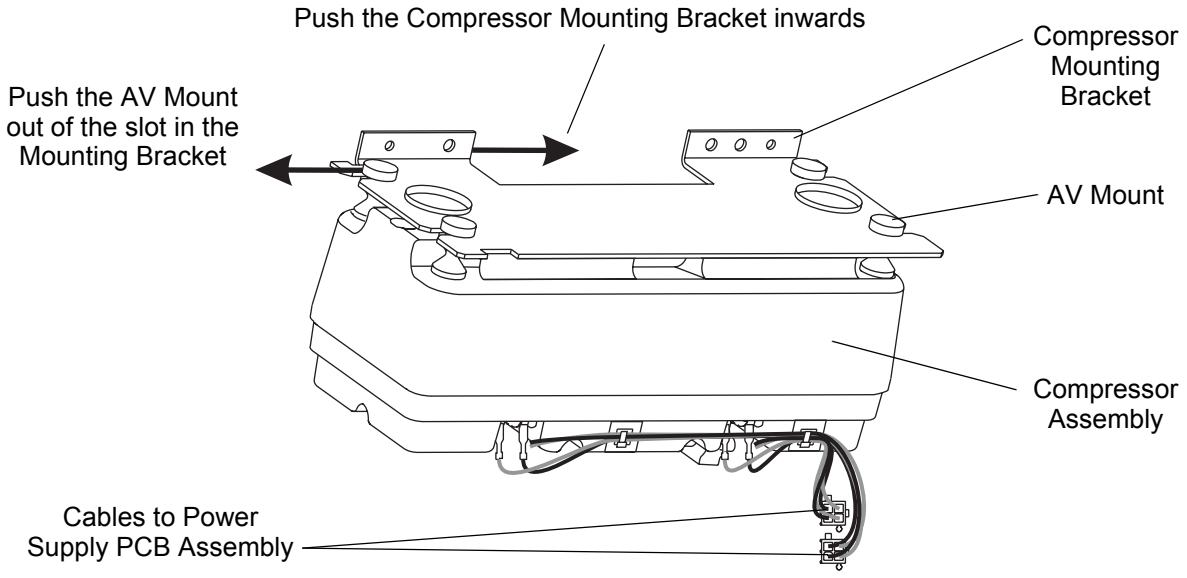
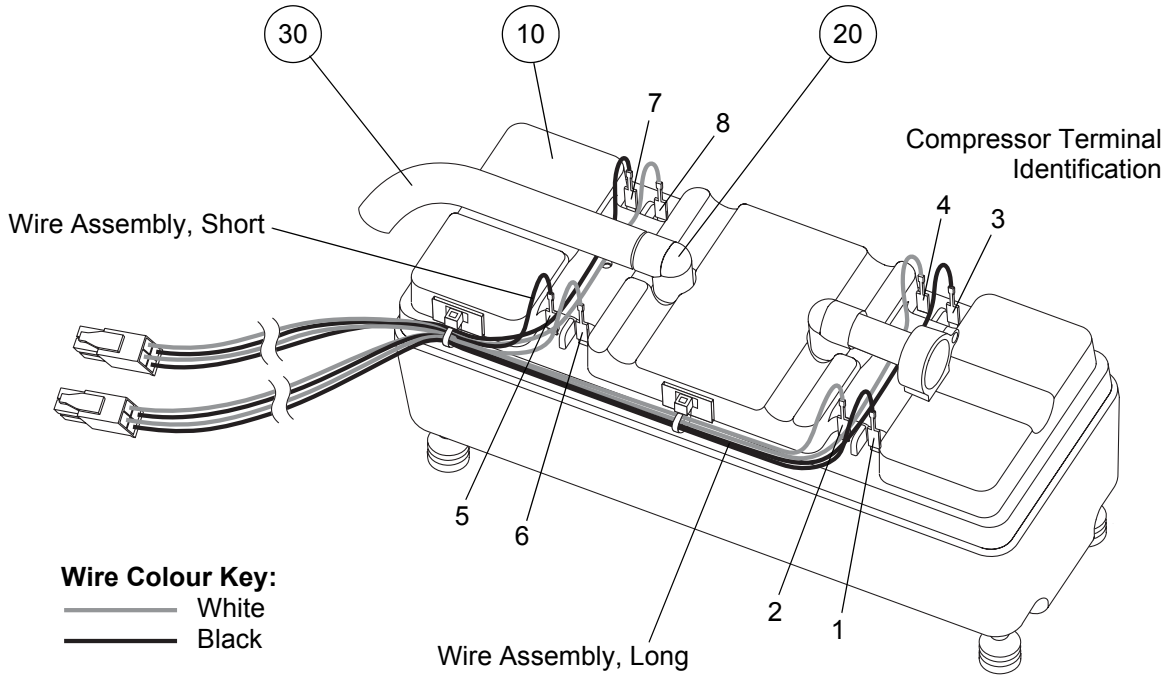

Push the Compressor Mounting Bracket inwards
Compressor Mounting Bracket
Push the AV Mount out of the slot in the Mounting Bracket
AV Mount
Compressor Assembly
Cables to Power Supply PCB Assembly

Figure 44 - Removing the AV Mounts from the Mounting Bracket



Wire Assembly Connections:

Short: White wires: 6 and 8
Black wires: 5 and 7

Long: White Wires: 2 and 4
Black Wires: 1 and 3

Figure 45 - Compressor Assembly

Table 18 - Compressor Assembly

Item	Part Number	Description	Qty
10	509051	Compressor Assembly, Series 6, 5.5V 50/60Hz	1
20	630335	Elbow	1
30	630334	Tube, Compressor Assembly - Silencer Bag Assembly	1

20.4 At the other end of the compressor assembly, do the following (Refer to Figure 44):

20.4.1 Hold the compressor assembly, and push the mounting bracket in towards the centre of the compressor assembly.

20.4.2 At the same time, carefully push the grooved part of the remaining two AV mounts into the slots in the mounting bracket.

20.5 Install the two compressor bump stops (Fig 43, Item 40) through the compressor bracket grommets (Fig 43, Item 30), and over the spigots in the compressor assembly.

20.6 Install the two screws (Fig 43, Item 50) to secure the compressor bump stops.

20.7 Install the compressor assembly and mounting bracket into the pump (Refer to Page 17, Section 18).

21 Replacing the Compressor Assembly

21.1 Remove the compressor assembly from the pump, and separate from the mounting bracket (Refer to Page 19, Section 19).

21.2 Remove the large diameter tube (to the silencer bag assembly, Fig 45, Item 30) and the elbow (Fig 45, Item 20) from the outlet on the top of the compressor assembly (Fig 45, Item 10).

21.3 Install the large diameter tube (to the silencer bag assembly, Fig 45, Item 30) and the elbow (Fig 45, Item 20) onto the outlet on the top of the new compressor assembly (Fig 45, Item 10).

21.4 Check that the crimp connectors on the two wire assemblies (long and short) are correctly connected to the compressor assembly. Refer to Figure 45 for the correct wire colours and compressor terminal connections.

Note: *The two wire assemblies are part of the compressor assembly.*

21.5 Install the compressor assembly onto the mounting bracket, and then into the pump (Refer to Page 19, Section 20).

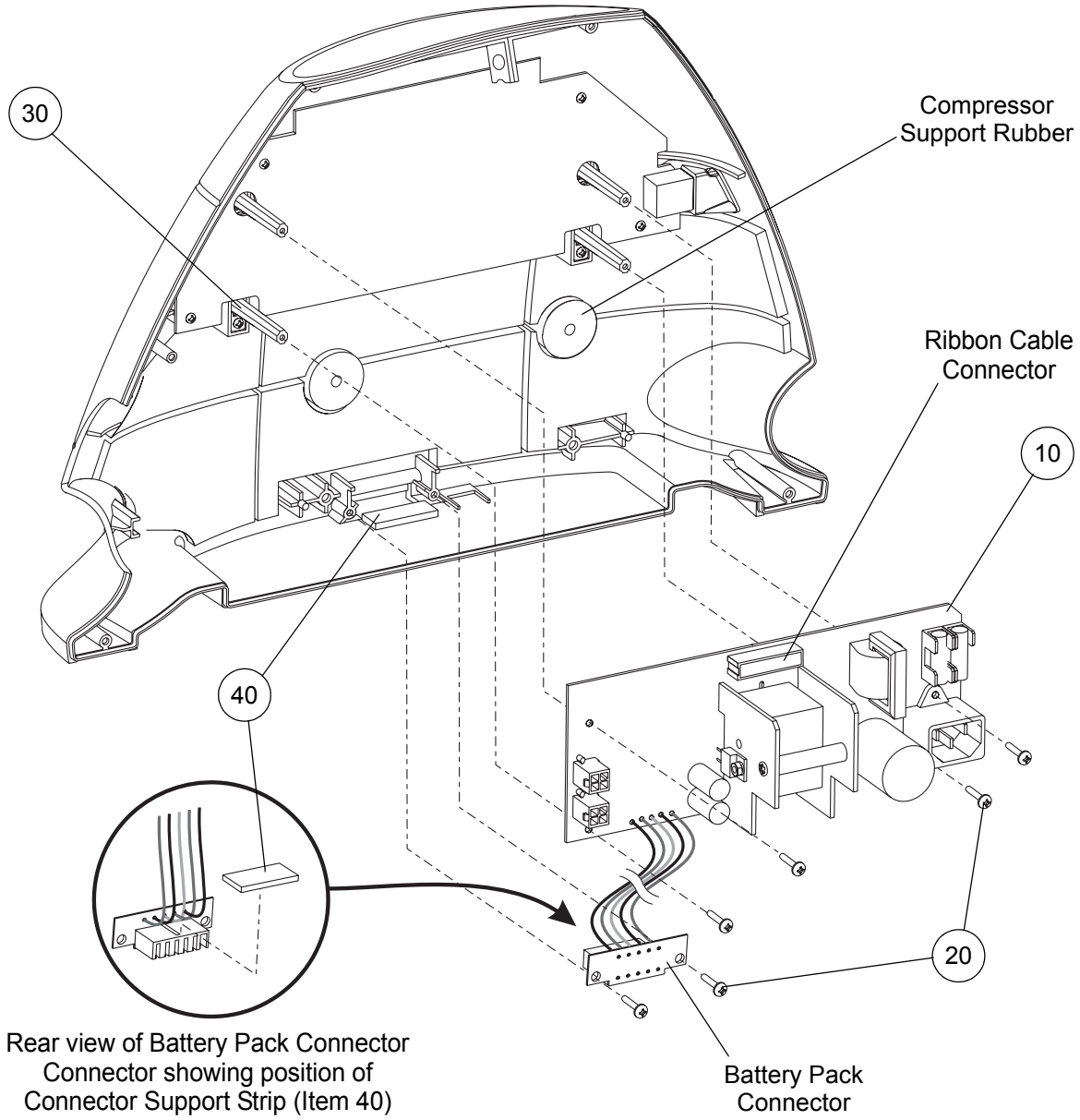


Figure 46 - Replacing the Power Supply PCB Assembly

Table 19 - Power Supply PCB Assembly Parts List

Item	Part Number	Description	Qty
10	507058	Power Supply PCB (Printed Circuit Board) Assembly	1
20	FAS223	Screw, 3 dia x 10 Pan Head	6
30	630318	PCB Mounting Pillar	4
40	507410	Connector Sealing Strip	2

22 Removing the Power Supply PCB (Printed Circuit Board) Assembly

WARNING: DO NOT CONNECT THE MAINS/POWER CORDSET TO THE POWER SUPPLY PCB ASSEMBLY, AND SWITCH ON THE MAINS/POWER SUPPLY, WHEN THE REAR CASE IS REMOVED FROM THE PUMP. VOLTAGES IN EXCESS OF 230 VOLTS RMS / 400 VOLTS DC ARE PRESENT ON THE POWER SUPPLY PCB ASSEMBLY AND CAN, IN CERTAIN CIRCUMSTANCES, BE LETHAL.

CAUTION: Electrostatic discharge can seriously damage the power supply PCB assembly. Adequate earthing precautions must be taken prior to handling it.

Note: *The power supply PCB assembly includes the battery pack connector, which is hard-wired to it.*

22.1 Remove the compressor assembly and mounting bracket from the pump (Refer to Page 17, Section 17).

22.2 Disconnect the ribbon cable connector (Refer to Figures 35 and 46) from the top of the power supply PCB assembly (Fig 46, Item 10).

22.3 Remove the two screws (Fig 46, Item 20) and the battery pack connector from the front case.

22.4 Remove the four screws (Fig 46, Item 20) and the power supply PCB assembly (Fig 46, Item 10) from the four PCB mounting pillars (Fig 46, Item 30).

23 Installing the Power Supply PCB (Printed Circuit Board) Assembly

WARNING: DO NOT CONNECT THE MAINS/POWER CORDSET TO THE POWER SUPPLY PCB ASSEMBLY, AND SWITCH ON THE MAINS/POWER SUPPLY, WHEN THE REAR CASE IS REMOVED FROM THE PUMP. VOLTAGES IN EXCESS OF 230 VOLTS RMS / 400 VOLTS DC ARE PRESENT ON THE POWER SUPPLY PCB ASSEMBLY AND CAN, IN CERTAIN CIRCUMSTANCES, BE LETHAL.

23.1 Put the power supply PCB assembly (Fig 46, Item 10) onto the four PCB mounting pillars (Fig 46, Item 30), and install the four screws (Fig 46, Item 20) to secure it.

23.2 Connect the ribbon cable connector (Refer to Figures 35 and 46) from the control PCB assembly onto the top of the power supply PCB assembly (Fig 46, Item 10).

23.3 If a new power supply PCB assembly is being installed, stick a new connector sealing strip (Fig 46, Item 40) to the back of the battery pack connector. If the original power supply PCB assembly is being re-installed, make sure the connector sealing strip is still stuck to the back of the battery pack connector (Refer to Figure 46).

23.4 Make sure there is a second connector sealing strip (Fig 46, Item 40) stuck to the front case, adjacent to the battery pack connector slot (Refer to Figure 46).

23.5 Insert the battery pack connector into the slot in the front case, and install the two screws (Fig 46, Item 20) to secure it.

Note: *Make sure the wires from the power supply PCB assembly to the battery pack connector do not lie on top of the circular compressor support rubbers (Refer to Figure 46).*

23.6 Install the compressor assembly and mounting bracket into the pump (Refer to Page 17, Section 18).

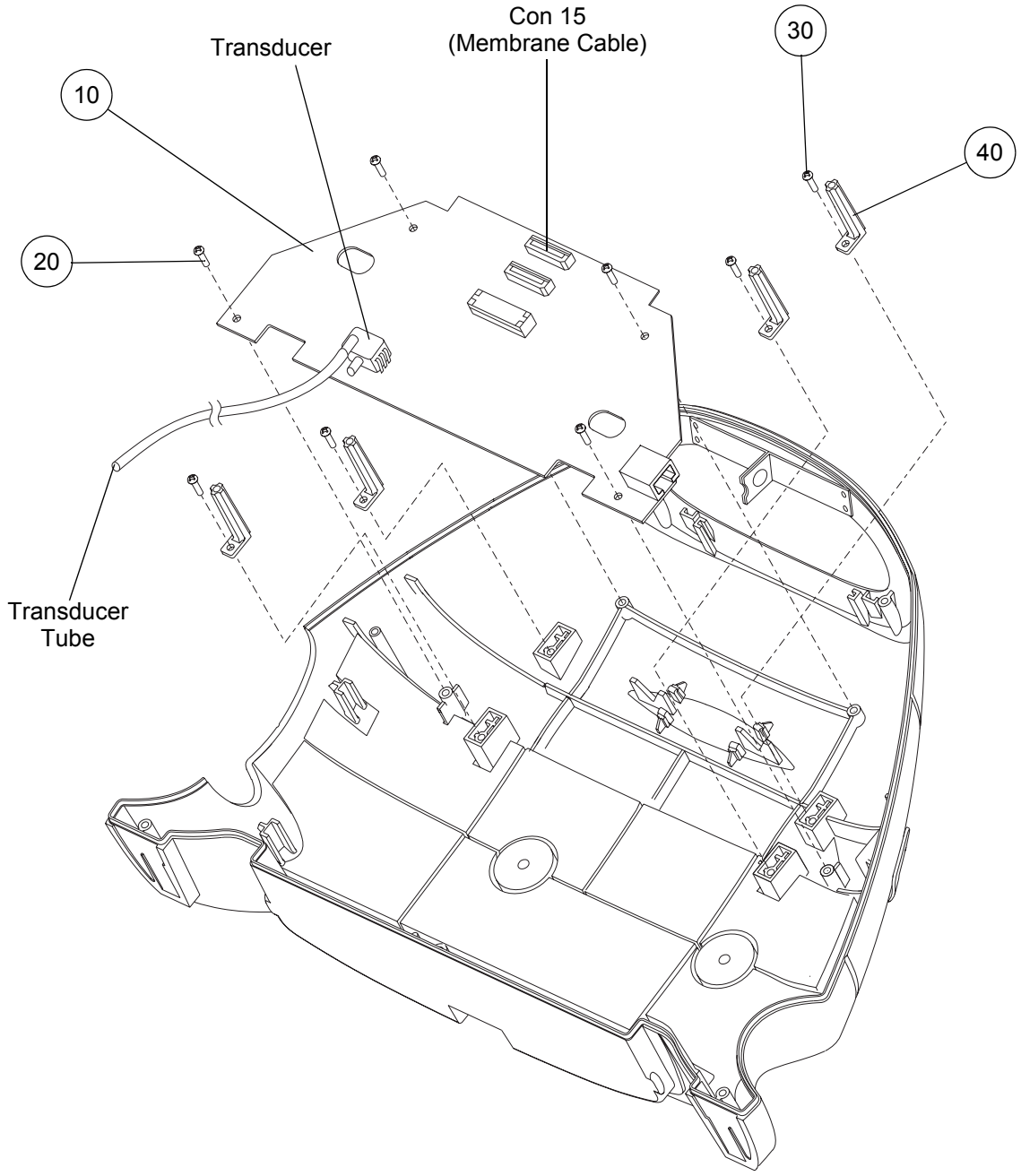


Figure 47 - Replacing the Control PCB Assembly

Table 20 - Control PCB Assembly Parts List

Item	Part Number	Description	Qty
10	630400	Control PCB (Printed Circuit Board) Assembly	1
20	FAS145	Screw, 3 dia x 8 Pan Head	4
30	FAS223	Screw, 3 dia x 10 Pan Head	4
40	630318	PCB Mounting Pillar	4

24 Removing the Control PCB (Printed Circuit Board) Assembly

CAUTION: Electrostatic discharge can seriously damage the control PCB assembly. Prior to replacing it, adequate earthing precautions must be taken.

Note: *The transducer tube is part of the control PCB assembly.*

24.1 Remove the power supply PCB assembly from the pump (Refer to Page 23, Section 22).

24.2 Carefully pull the membrane cable out of the membrane connector on the control PCB assembly (Fig 47, PCB Con 15).

24.3 Remove the four screws (Fig 47, Item 20), and lift the control PCB assembly (Fig 47, Item 10) out of the front case.

Note: *Do not damage the transducer or transducer tube on the control PCB assembly as you remove it from the pump (Refer to Figure 47).*

25 Installing the Control PCB (Printed Circuit Board) Assembly

25.1 Make sure the transducer tube is pushed fully onto the top outlet on the transducer on the control PCB assembly (Refer to Figure 47).

CAUTION: Do not handle the transducer on the control PCB assembly unnecessarily. The transducer is a sensitive device. To avoid damage, put your finger at the back of the transducer while you push the tube onto the top outlet at the front of the transducer.

25.2 Put the control PCB assembly (Fig 47, Item 10) into the front case, over the PCB mounting pillars (Fig 47, Item 40), and install the four screws (Fig 47, Item 20) to secure it to the front case.

25.3 Carefully push the membrane cable into the membrane connector on the control PCB assembly (Fig 47, PCB Con 15).

25.4 Install the power supply PCB assembly into the pump (Refer to Page 23, Section 23).

26 Removing the PCB Mounting Pillars

26.1 Remove the control PCB assembly from the pump (Refer to Page 25, Section 24).

26.2 Remove the four screws (Fig 47, Item 30) and four PCB mounting pillars (Fig 47, Item 40) from the front case.

27 Installing the PCB Mounting Pillars

27.1 Install the four PCB mounting pillars (Fig 47, Item 40) and four screws (Fig 47, Item 30) into the front case.

27.2 Install the control PCB assembly into the pump (Refer to Page 25, Section 25).

28 Replacing the Battery on the Control PCB Assembly

The battery on the control PCB assembly provides power for the real time clock. The battery should not require replacement until after several years of continuous use. When the old battery is removed, the real time clock will lose its time and date settings, which can only be reloaded from a PC-based service tool, so the procedure should only be carried out in a Huntleigh service environment.

28.1 Remove the control PCB assembly from the pump (Refer to Page 25, Section 24).

28.2 Cut and remove the cable tie (Fig 48, Item 20) which secures the battery (Fig 48, Item 10) to the control PCB assembly (Fig 48, Item 30), and move the battery a small distance away.

28.3 Put the new battery (Fig 48, Item 10) in the correct position on the control PCB assembly, adjacent to the old battery.

28.4 Secure the new battery to the control PCB assembly with a new cable tie (Fig 48, Item 20).

28.5 Disconnect the old battery and connect the new battery, as follows:

28.5.1 Disconnect the 2-pin battery cable connector from the battery connector on the control PCB assembly (Fig 48, PCB Con 6), and remove the battery.

28.5.2 Connect the 2-pin battery cable connector onto the control PCB assembly.

28.6 Install the control PCB assembly into the pump, and then re-assemble the pump (Refer to Page 25, Section 25).

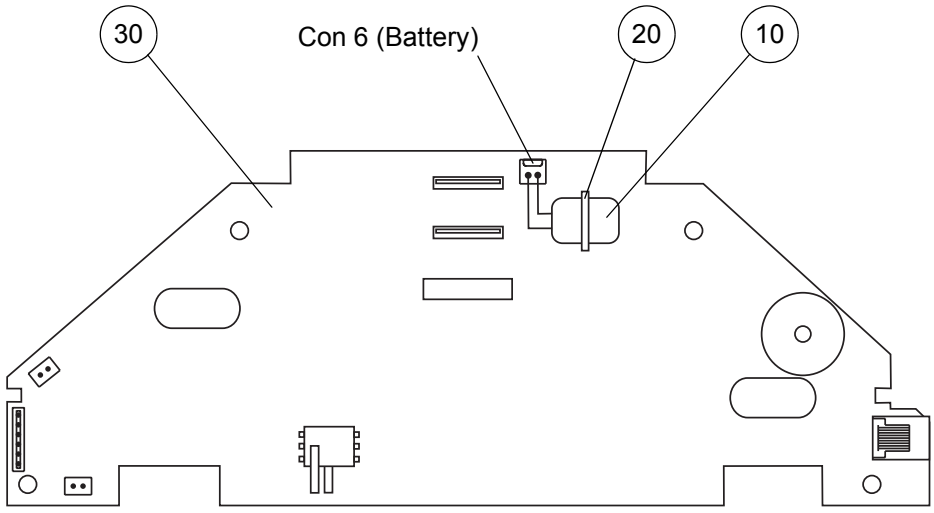


Figure 48 - Replacing the Rechargeable Battery

Table 21 - Rechargeable Battery Parts List

Item	Part Number	Description	Qty
10	151457	Rechargeable Battery, Spares Item	1
20	BP196	Cable Tie	1
30	630400	Control PCB (Printed Circuit Board) Assembly	1

29 Pump Labels

Note: *You must stick the labels on in the correct order.*

29.1 Stick the serial number label (Fig 49, Item 10) onto the rear case. Make sure the orientation of the text on the serial number label is correct (Refer to Figure 49).

29.2 Put the product label (Fig 49, Item 20) over the serial number label, and stick it onto the rear case. Make sure the orientation of the text on the product label is correct (Refer to Figure 49).

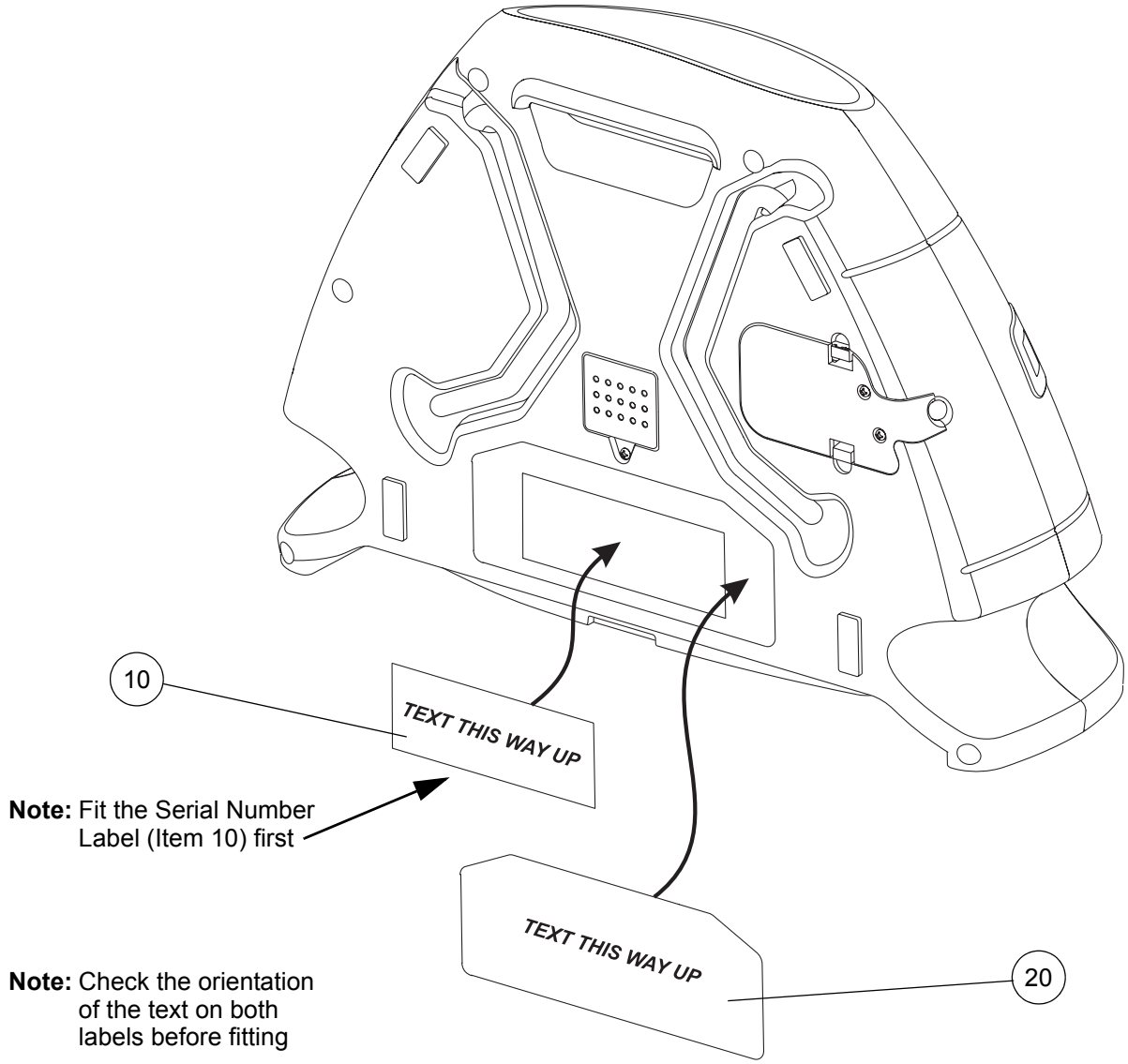

10
TEXT THIS WAY UP
Note: Fit the Serial Number Label (Item 10) first
TEXT THIS WAY UP
20
Note: Check the orientation of the text on both labels before fitting

Figure 49 - Pump Labels

Table 22 - Pump Label Parts List

Item	Part Number	Description	Qty
10	TBA	Pump Serial Number Label (UK)	1
20	TBA	Pump Product Label	1

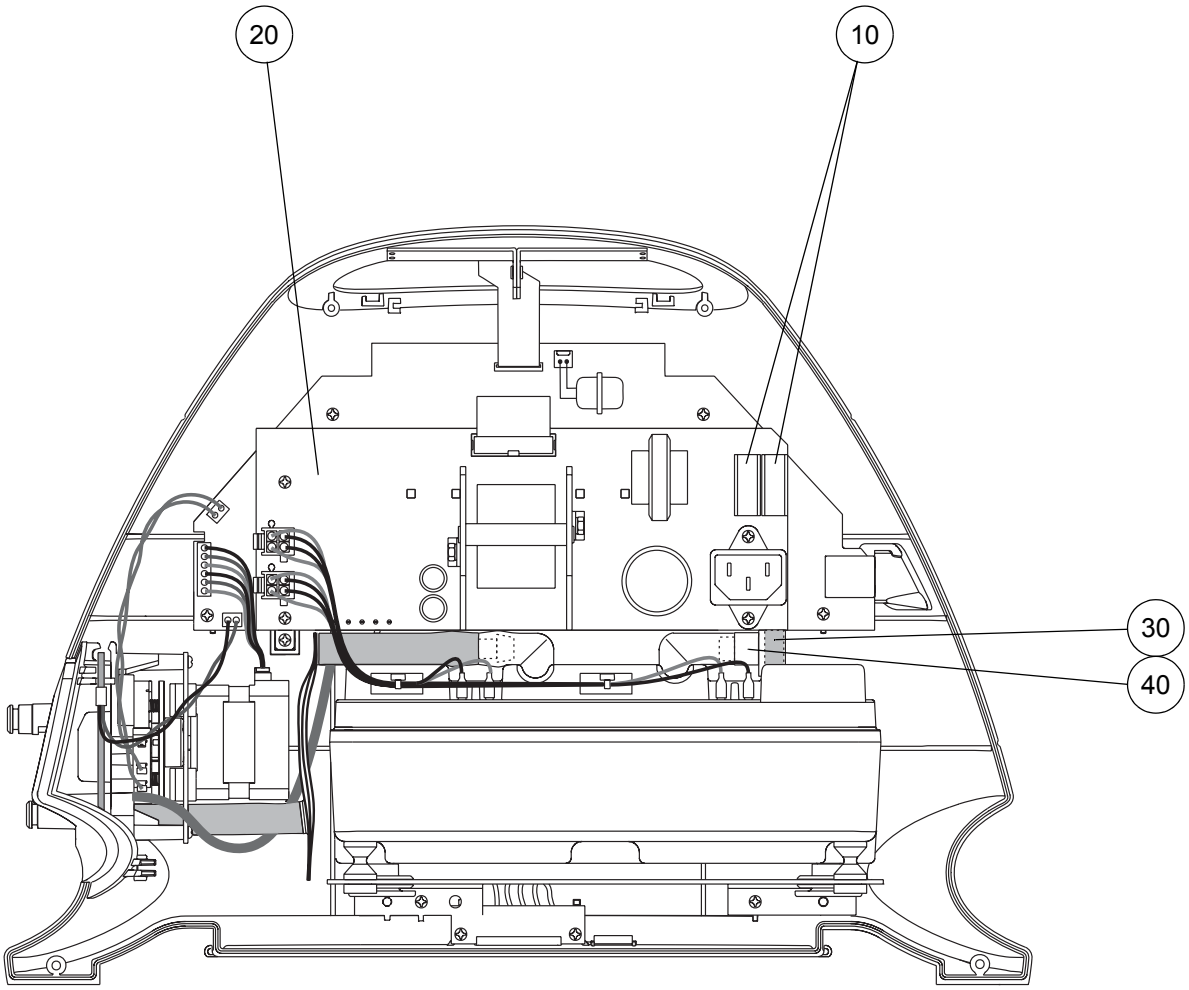


Figure 50 - Replacing the Mains/Power Fuses and Compressor Filter

Table 23 - Mains/Power Fuse and Compressor Filter Parts List

Item	Part Number	Description	Qty
10	507422	Fuse, 3.15A 20mm Type T	2
20	507058	Power Supply PCB (Printed Circuit Board) Assembly	1
30	509317	Air Inlet Filter, Compressor Assembly	1
40	509320	Air Inlet Filter Holder	1

30 Replacing the Mains/Power Fuses on the Power Supply PCB Assembly

WARNING: MAKE SURE THE REPLACEMENT FUSES ARE THE CORRECT TYPE AND RATING, OR THE ELECTRICAL SAFETY OF THE PUMP MAY BE IMPAIRED.

Note: *Always replace both fuses even if only one has "blown".*

30.1 Remove the rear case from the front case (Refer to Page 5, Section 7).

30.2 Lay the front case down with the inside surface pointing upwards.

30.3 Un-clip the plastic cover on one of the fuseholders on the power supply PCB assembly (Fig 50, Item 20), and remove the fuse (Fig 50, Item 10).

30.4 Install the new fuse (Fig 50, Item 10) into the fuseholder, and clip the plastic cover onto the fuseholder.

30.5 Repeat for the second fuse (Fig 50, Item 40).

30.6 Install the rear case onto the front case (Refer to Page 5, Section 8).

31 Replacing the Air Inlet Filter on the Compressor Assembly

31.1 Remove the rear case from the front case (Refer to Page 5, Section 7).

31.2 Lay the front case down with the inside surface pointing upwards.

31.3 Using a pair of tweezers, remove the air inlet filter (Fig 50, Item 30) from the air inlet filter holder (Fig 50, Item 40).

31.4 Insert a new air inlet filter (Fig 50, Item 30) into the air inlet filter holder.

Note: *Make sure the air inlet filter is pushed fully into the air inlet filter holder.*

31.5 Install the rear case onto the front case (Refer to Page 5, Section 8).

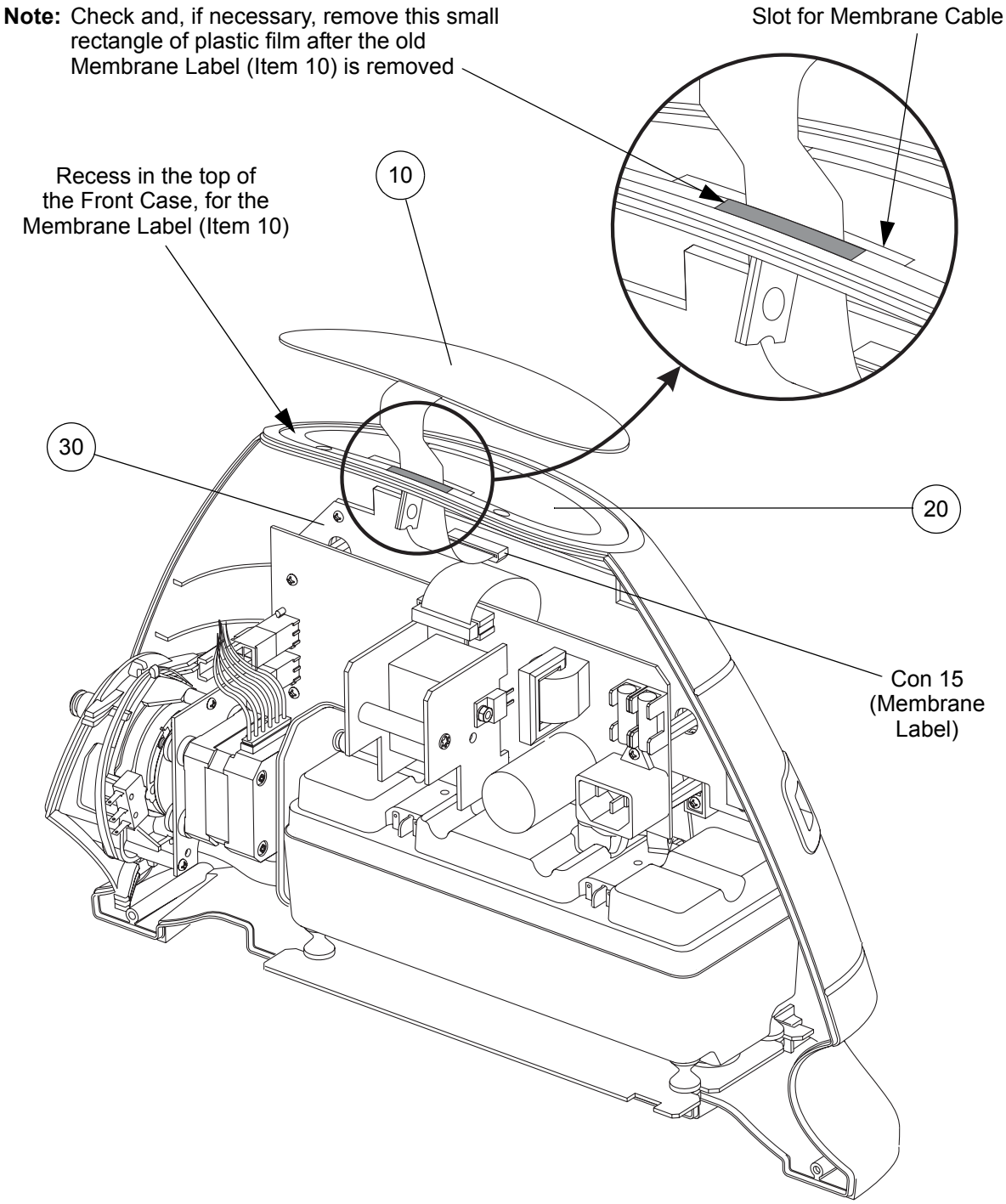

Note: Check and, if necessary, remove this small rectangle of plastic film after the old Membrane Label (Item 10) is removed
Slot for Membrane Cable
Recess in the top of the Front Case, for the Membrane Label (Item 10)
10
30
20
Con 15 (Membrane Label)

Figure 51 - Replacing the Membrane Label

Table 24 - Membrane Label Parts List

Item	Part Number	Description	Qty
10	630448	Membrane Label, Blue, Iconised	1
20	630328	LCD Window Cover	1
30	630400	Control PCB (Printed Circuit Board) Assembly	1

32 Removing the Membrane Label

32.1 Remove the rear case from the front case (Refer to Page 5, Section 7).

32.2 Pull the membrane cable out of the membrane connector on the control PCB assembly (Fig 51, PCB Con 15).

32.3 Using a flat-bladed screwdriver or similar tool, lift up the edge of the membrane label (Fig 51, Item 10) and carefully remove it from the LCD window cover (Fig 51, Item 20).

Note: *Do not damage the LCD window cover or recess in the top of the front case.*

33 Installing the Membrane Label

33.1 If the new membrane label (Fig 51, Item 10) is being installed onto an “old” front case, make sure the LCD window cover (Fig 51, Item 20) and recess in the top of the front case are clean (Refer to Figure 51).

Note: *When the old membrane label is removed, a small rectangle of plastic film can remain stuck to the recess in the top of the front case, adjacent to the membrane cable slot in the LCD window cover. Remove this plastic film, and clean the LCD window cover and recess in the top of the front case (Refer to Figure 51).*

33.2 Before you remove the protective sheet from the back of the new membrane label (Fig 51, Item 10), check the following:

- The correct orientation of the membrane label on the top of the pump (Refer to Figure 52).
- The position of the slot in the LCD window cover (Fig 51, Item 20) through which the membrane cable passes (Refer to Figure 51).

33.3 Remove the protective sheet from the back of the membrane label.

33.4 Pass the membrane cable through the slot in the LCD window cover.

33.5 Carefully push the membrane cable into the membrane connector on the control PCB assembly (Fig 51, PCB Con 15).

33.6 Install the rear case onto the front case (Refer to Page 5, Section 8).

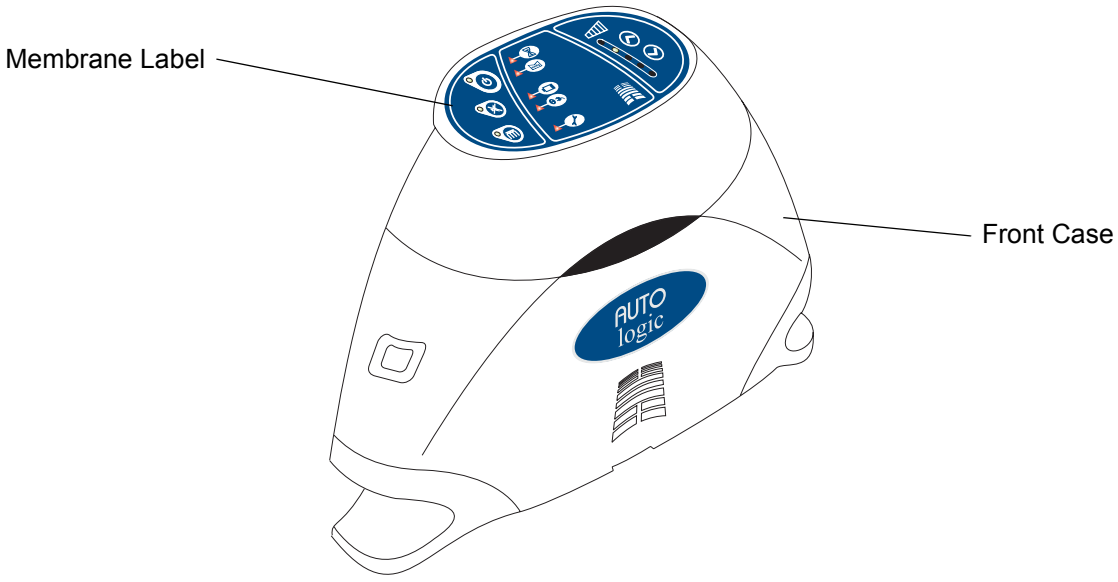


Figure 52 - Orientation of the Membrane Label

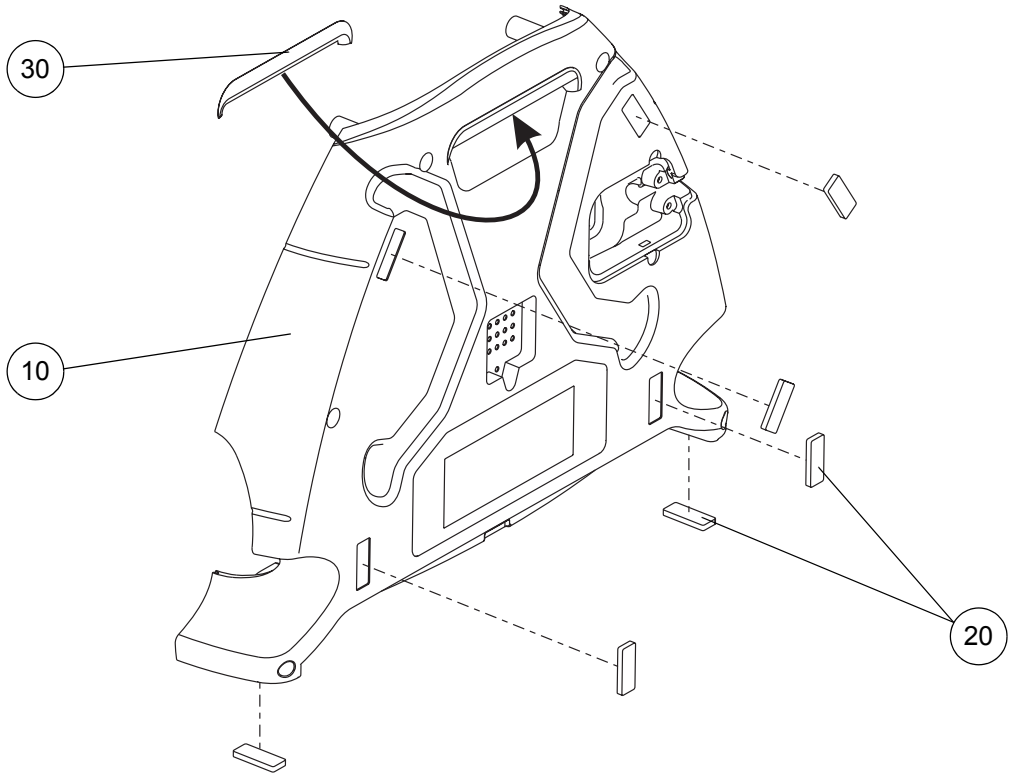


Figure 53 - Rear Case - Handle Insert and Rubber Feet

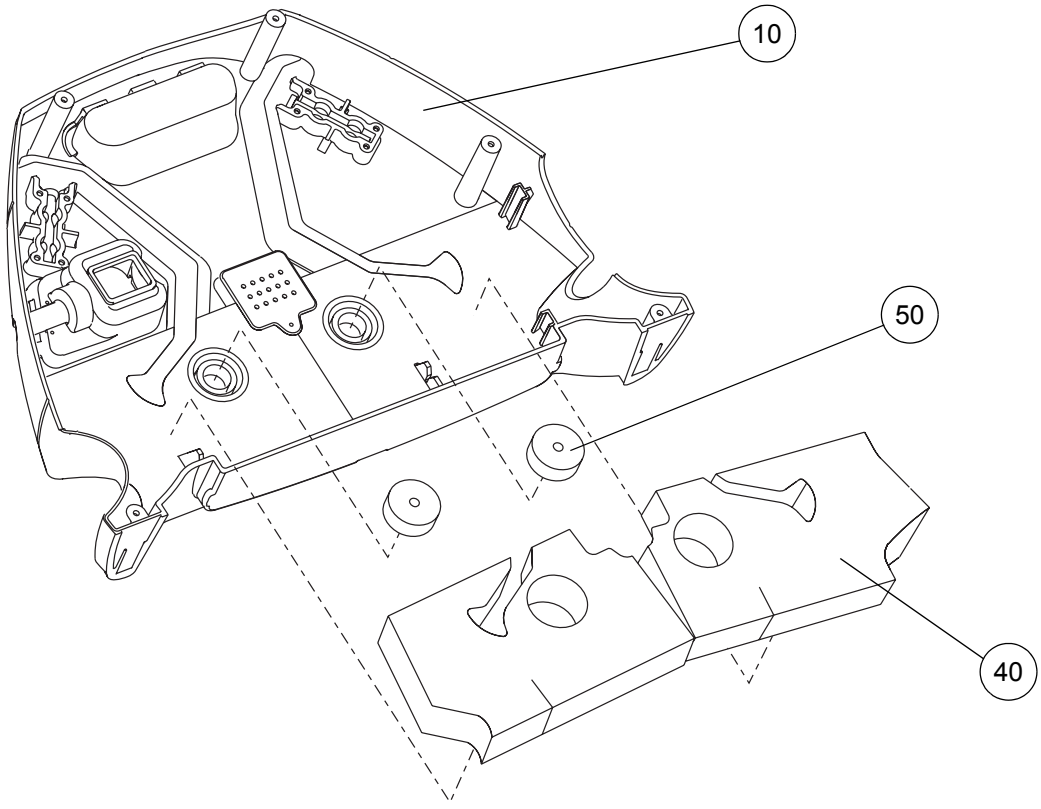


Figure 54 - Rear Case - Noise-Reduction Foam and Compressor Support Rubbers

34 Replacing the Rear Case

34.1 Remove the mains/power cordset from the pump (Refer to Page 3, Section 3).

34.2 Remove the air inlet filter from the rear case (Refer to Page 3, Section 5).

34.3 Remove the rear case from the front case (Refer to Page 5, Section 7).

34.4 Remove the hooks and hook covers from the rear case (Refer to Page 7, Section 9).

34.5 Discard the old rear case (Fig 53, Item 10).

34.6 Lay the new rear case (Fig 53, Item 10) down with the outside surface pointing upwards.

34.7 If not already fitted, install the following components onto the rear case:

34.7.1 A new handle insert (Fig 53, Item 30).

34.7.2 Eight new rubber feet (Fig 53, Item 30).

34.8 Turn the rear case over so that the inside surface is pointing upwards.

34.9 Remove the backing strips, and install the following components onto the rear case:

34.9.1 New noise-reduction foam (Fig 54, Item 40).

Note: *Make sure that the noise-reduction foam is accurately located in the recesses in the rear case, between the strengthening ribs.*

34.9.2 Two new compressor support rubbers (Fig 54, Item 50).

34.10 Install the hooks and hook covers onto the rear case (Refer to Page 7, Section 10).

34.11 Install the rear case onto the front case (Refer to Page 5, Section 8).

34.12 Install the air inlet filter onto the rear case (Refer to Page 3, Section 6).

34.13 Install the mains/power cordset onto the pump (Refer to Page 3, Section 4).

34.14 Stick the serial number and product labels onto the rear case (Refer to Page 27, Section 29).

Table 25 - Rear Case Components

Item	Part Number	Description	Qty
10	630321	Rear Case (Moulding only)	1
20	507413	Rubber Foot	6
30	630330	Handle Insert	1
40	630383	Noise-Reduction Foam, Rear Case	1
50	BP027	Compressor Support Rubber	2

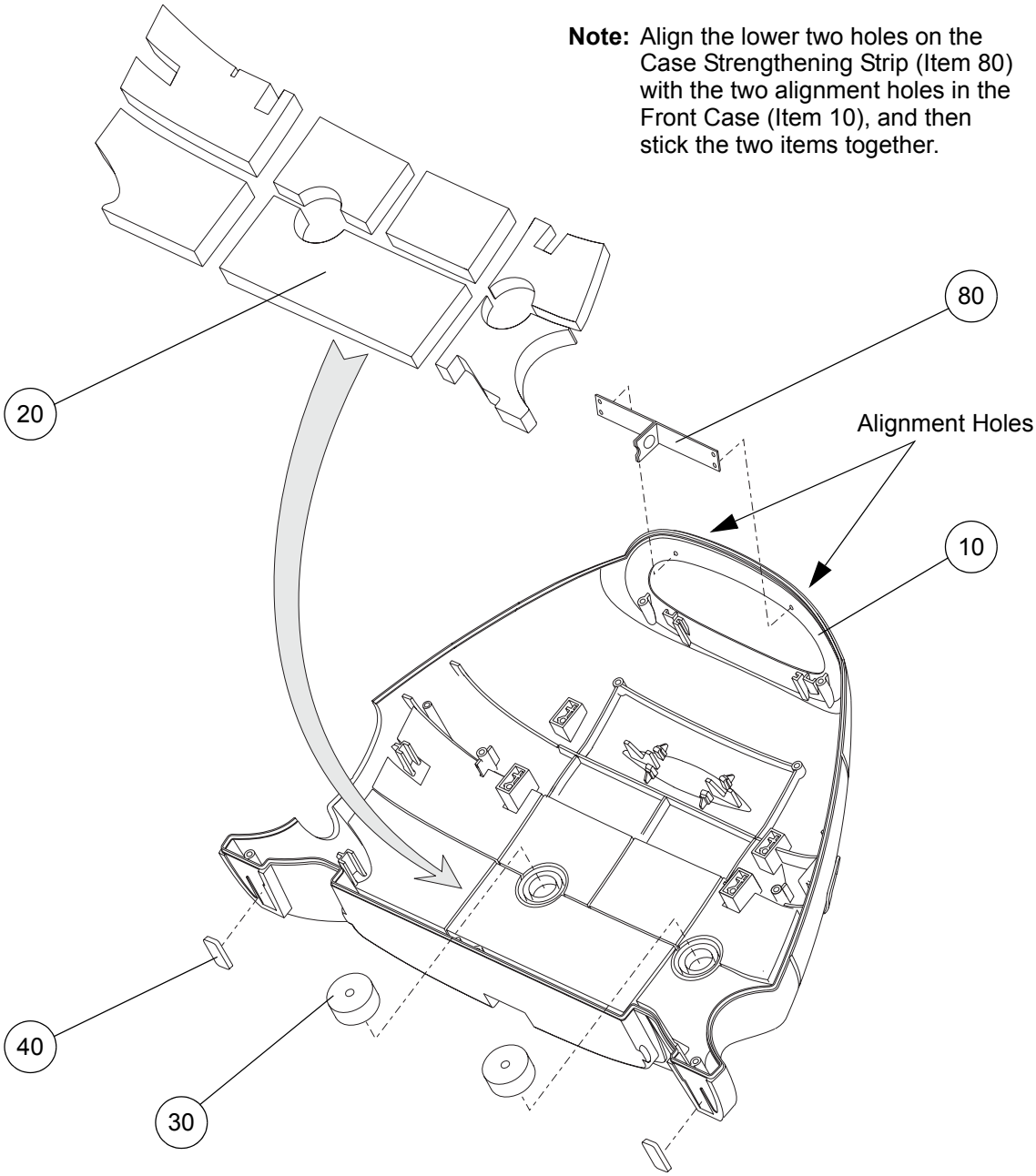

Note: Align the lower two holes on the Case Strengthening Strip (Item 80) with the two alignment holes in the Front Case (Item 10), and then stick the two items together.
80
20
Alignment Holes
10
40
30

Figure 55 - Front Case - Noise-Reduction Foam, Compressor Support Rubbers and Feet

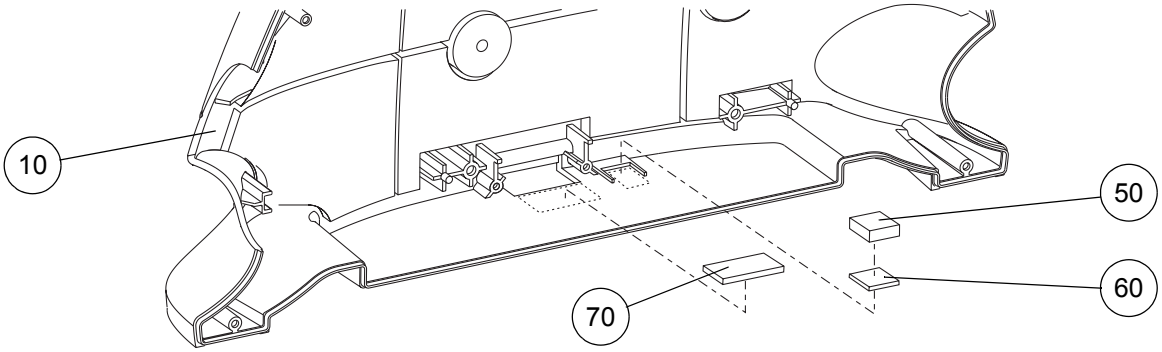


Figure 56 - Front Case - Ferrite Magnet, Mounting Pad and Connector Sealing Strip

35 Replacing the Front Case

35.1 Remove the mains/power cordset from the rear case (Refer to Page 3, Section 3).

35.2 Remove the rear case from the front case (Refer to Page 5, Section 7).

35.3 Remove the following components from the front case:

35.3.1 The manifold assembly (Refer to Page 9, Section 11).

35.3.2 The compressor assembly and mounting bracket (Refer to Page 17, Section 17).

35.3.3 The power supply PCB assembly, together with the external battery connector (Refer to Page 23, Section 22).

35.3.4 The control PCB assembly (Refer to Page 25, Section 24).

35.3.5 The PCB mounting pillars (Refer to Page 25, Section 26).

35.4 Discard the old front case (Fig 55, Item 10).

35.5 Lay the new front case (Fig 55, Item 10) down with the inside surface pointing upwards.

35.6 Install the following self-adhesive components onto the inside of the front case:

35.6.1 New noise-reduction foam (Fig 55, Item 20).

Note: *Make sure that the noise-reduction foam is accurately located in the recesses in the rear case, between the strengthening ribs.*

35.6.2 Two new compressor support rubbers (Fig 55, Item 30).

35.6.3 Two new rubber feet (Fig 55, Item 40).

35.6.4 The magnet mounting pad (Fig 56, Item 60), in the appropriate slot in the front case.

35.6.5 The ferrite magnet (Fig 56, Item 50) onto the ferrite mounting pad.

Note: *Make sure the ferrite magnet and magnet mounting pad are aligned with the sides of the slot in the front case.*

Table 26 - Front Case - Internal Components

Item	Part Number	Description	Qty
10	630320	Front Case (Moulding only)	1
20	630373	Noise-Reduction Foam, Front Case	1
30	BP027	Compressor Support Rubber	2
40	507413	Rubber Foot	2
50	BP042	Ferrite Magnet	1
60	507386	Magnet Mounting Pad	1
70	507410	Connector Sealing Strip	1
80	630399	Case Strengthening Strip, Self-Adhesive	1

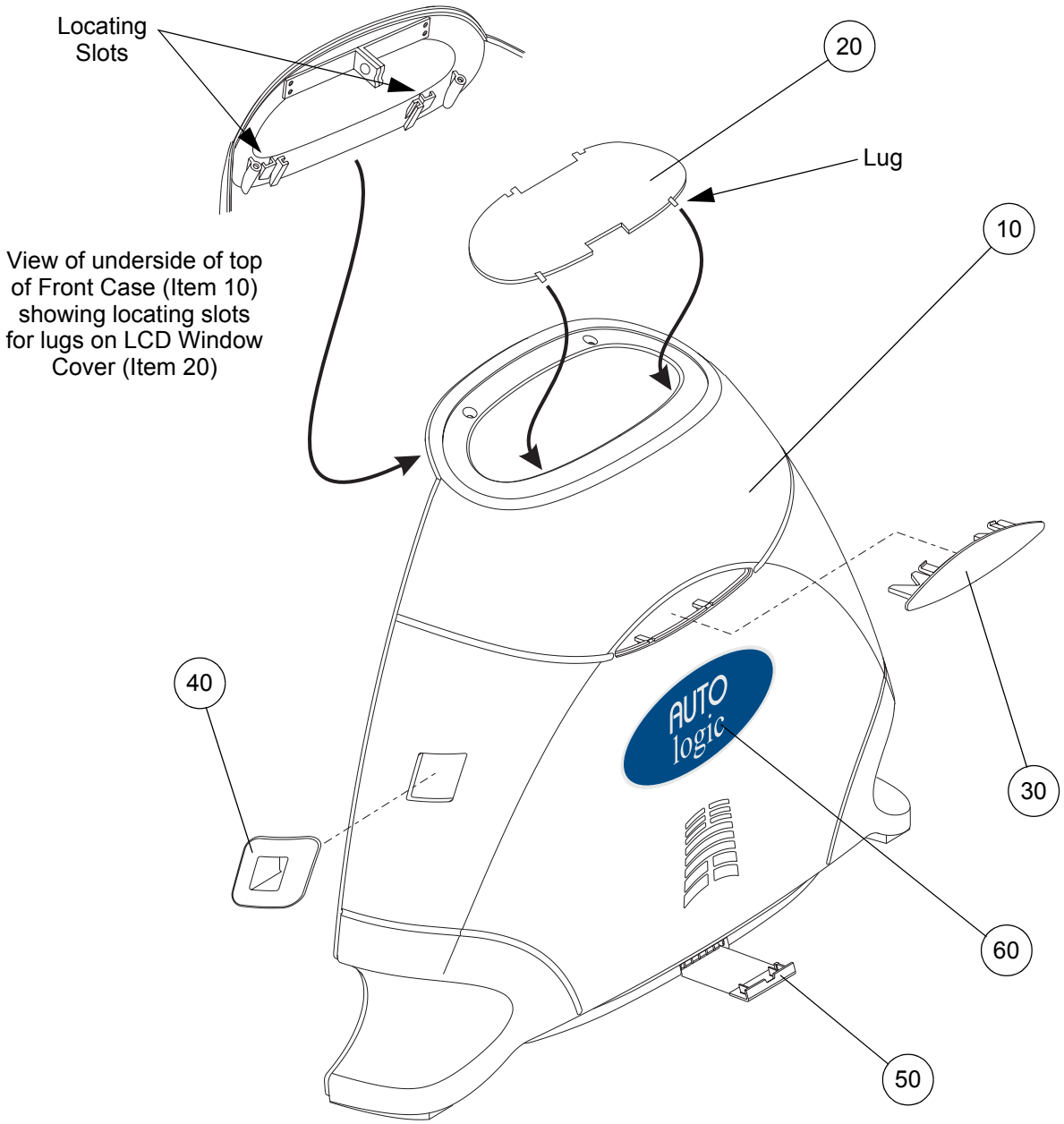


Figure 57 - Front Case - LCD Window, LED Lens, Grommet and Battery Socket Cover

Table 27 - Front Case - External Components

Item	Part Number	Description	Qty
10	630320	Front Case (Moulding only)	1
20	630328	LCD Window Cover	1
30	630324	IRDA LED Lens	1
40	630327	Grommet, Patient Handset	1
50	630319	Battery Socket Cover	1
60	630398	Pump Label, Auto Logic	1

35.7 Install the self-adhesive case strengthening strip (Fig 55, Item 80) onto the inside of the front case, as follows:

35.7.1 Remove the protective sheet from the back of the case strengthening strip.

35.7.2 Align the lower two holes on the case strengthening strip with the two alignment holes in the front case (Refer to Figure 55).

Note: *There are four holes on the case strengthening strip so that it can be installed either way round.*

Note: *Make sure the case strengthening strip does not obstruct the cutout in the top of the front case for the LCD window cover (Refer to Figure 57).*

35.7.3 Firmly press the case strengthening strip onto the inside of the front case to secure it.

35.8 Turn the rear case over so that the outside surface is pointing upwards.

35.9 Install the following components onto the outside of the front case:

35.9.1 A new IRDA LED lens (Fig 57, Item 30). Push the lens until it clicks securely into place.

Note: *The IRDA LED lens is not symmetrical, and can only be installed one way.*

35.9.2 A new patient handset grommet (Fig 57, Item 40).

35.9.3 A new self-adhesive **Auto Logic** pump label (Fig 57, Item 60).

Note: *Make sure the pump label is in the approximate position shown in Figure 57.*

35.10 Install a new LCD window cover (Fig 57, Item 20) into the top of the front case, as follows (Refer to Figure 57):

35.10.1 Insert the side of the LCD window cover with the two lugs through the top of the front case, from the outside.

35.10.2 Insert the lugs into the corresponding slots in the underside of the top of the front case.

35.10.3 Lower the other side of the LCD window cover onto the top of the front case, and gently push it down until it clicks into place.

35.10.4 If necessary, the LCD window cover can be removed from the old front case and installed into the new front case. Remove the old LCD window cover, as follows:

35.10.4.1 Remove the membrane label (Refer to Page 31, Section 32).

35.10.4.2 Remove the LCD window cover, as the reverse procedure to that detailed in Para 35.10.1 to Para 35.10.3 (above).

35.11 Install the following components into the front case:

35.11.1 The PCB mounting pillars (Refer to Page 25, Section 27).

35.11.2 The control PCB assembly (Refer to Page 25, Section 25).

35.11.3 The membrane label (Refer to Page 31, Section 33).

35.11.4 The power supply PCB assembly, together with the external battery connector (Refer to Page 23, Section 23).

35.11.5 Stick a new connector sealing strip (Fig 55, Item 70) to the front case, adjacent to the battery pack connector.

35.11.6 The compressor assembly and mounting bracket (Refer to Page 17, Section 18).

35.11.7 The manifold assembly (Refer to Page 9, Section 12).

35.11.8 A battery socket cover (Fig 57, Item 50).

35.12 Install the rear case onto the front case (Refer to Page 5, Section 8).

35.13 Install the mains/power cordset onto the pump (Refer to Page 3, Section 4).

CHAPTER 6

MATTRESS OVERLAY REPAIR

1 General

This chapter details repair procedures for the **Auto Logic** mattress overlay (core). All repairs should be carried out by Huntleigh approved service personnel.

To carry out the repair procedures, fully deflate the mattress first, as follows:

1.1 Disconnect the tubeset between the mattress and the pump.

1.2 Operate the CPR (Cardio-Pulmonary Resuscitation) unit to deflate the mattress.

Note: *If the mattress overlay is attached to the mattress base pad (to make a mattress replacement), it is easier to carry out the repair procedures if the mattress overlay is separated from the mattress base pad first (Refer to Page 15, Section 11). However it is not necessary to separate them unless the particular repair procedure specifies it.*

After carrying out a service or any repairs, the mattress must be tested for serviceability. Carry out an inflation test on the mattress in accordance with Chapter 4 “Testing”, Page 29, Section 19.

2 Removing the Top Cover Assembly

There are three different materials used in the **Auto Logic 110/200** top cover assemblies:

- Dartex. This is the standard top cover assembly.
- Advantex®.
- eVENT® [1].

The three top cover assemblies for the **Auto Logic 110** mattress overlay (Refer to Table 28) are identical to the three top cover assemblies for the **Auto Logic 200** mattress replacement (Refer to Table 29), except for the product logo at the foot end of the mattress (either "**Auto Logic 110**" or "**Auto Logic 200**").

2.1 Undo the two long zips which secure the top cover assembly (Table 28, Item 10 or Table 29, Item 10) to the base sheet assembly.

2.2 Remove the top cover assembly from the mattress.

3 Installing the Top Cover Assembly

The three top cover assemblies for the **Auto Logic 110** mattress overlay (Refer to Table 28) are identical to the three top cover assemblies for the **Auto Logic 200** mattress replacement (Refer to Table 29), except for the product logo at the foot end of the mattress (either "**Auto Logic 110**" or "**Auto Logic 200**").

Note: *Make sure that you install the top cover assembly with the correct product logo onto the mattress.*

3.1 Before installing the top cover, check that the ends of the cell assemblies are correctly connected to the sides of the base sheet assembly and the cell assemblies are evenly positioned in the loops on the base sheet assembly. Any repairs will normally have disturbed the position of the cells.

3.2 Position the top cover assembly (Table 28, Item 10 or Table 29, Item 10) over the mattress, with the feet logo uppermost and at the foot end of the bed.

3.3 Starting at the head end of the mattress, fasten the two long zips to secure the top cover assembly to the base sheet assembly.

---

1. *eVENT® is a registered trademark of BHA Technologies Inc.*

Table 28 - Auto Logic 110 Top Cover Assembly Parts List

Item	Part Number	Description	Qty
10	PXA080	Top Cover Assembly, **Auto Logic 110** Mattress Overlay, Dartex (Standard)	1
-	PXA082	Top Cover Assembly, **Auto Logic 110** Mattress Overlay, Advantex	1
-	PXA084	Top Cover Assembly, **Auto Logic 110** Mattress Overlay, eVENT	1

Table 29 - Auto Logic 200 Top Cover Assembly Parts List

Item	Part Number	Description	Qty
10	PXB080	Top Cover Assembly, **Auto Logic 200** Mattress Replacement, Dartex (Standard)	1
-	PXB082	Top Cover Assembly, **Auto Logic 200** Mattress Replacement, Advantex	1
-	PXB084	Top Cover Assembly, **Auto Logic 200** Mattress Replacement, eVENT	1

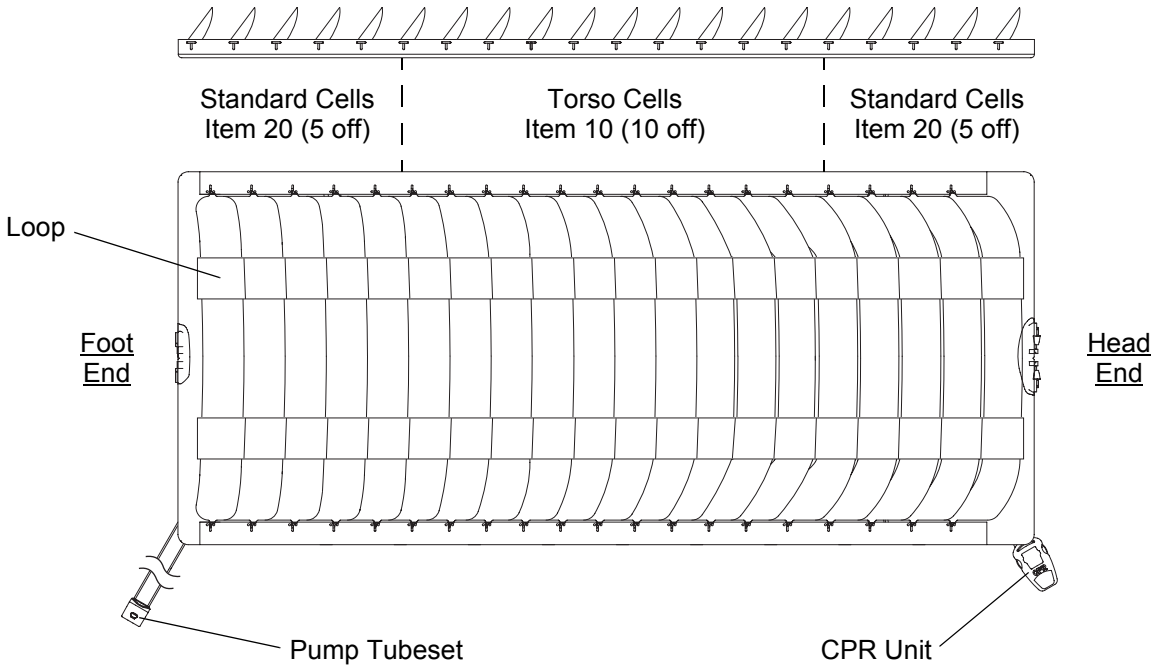


Figure 58 - Cell Arrangement

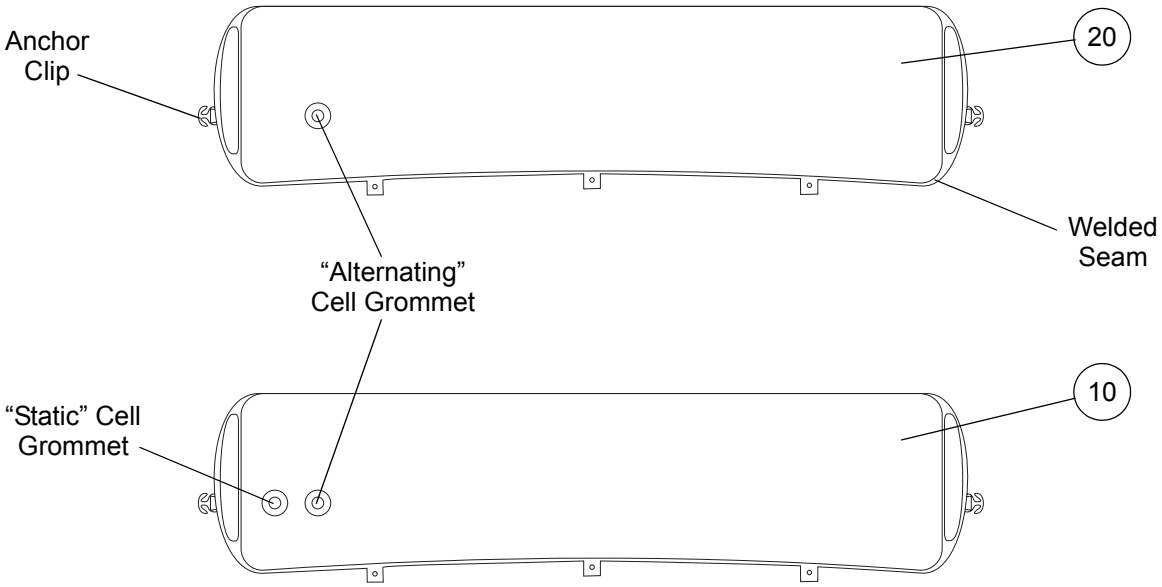


Figure 59 - Mattress Cell Orientation

Table 30 - Top Cover and Mattress Cell Parts List

Item	Part Number	Description	Qty
10	PXA050	Cell Assembly, Torso (Cell-in-Cell), Light Blue	10
20	PXA060	Cell Assembly, Standard, Dark Blue	10

4 Removing a Cell Assembly

4.1 Remove the top cover (Refer to Page 2, Section 2).

4.2 At both ends of the cell assembly (Fig 60, Items 10 or 20), remove the anchor clip from the base sheet assembly as follows (Refer to Figure 60):

4.2.1 Step 1: Pull the end of the anchor clip outwards, and away from the base sheet assembly.

4.2.2 Step 2: Rotate the anchor clip though approximately 90° clockwise or counterclockwise.

4.2.3 Step 3: Pull the anchor clip through the base sheet assembly towards the centre of the mattress.

4.3 At the manifold end of the cell assembly, disconnect the cell feed(s) from the T-connector(s) on the manifold tube assembly, as follows.

Note: *The 10 off torso cell assemblies (Fig 60, Item 10) in the centre of the mattress have two cell feeds. The 10 off standard cell assemblies (Fig 60, Item 20) at either end of the mattress have only one cell feed.*

4.3.1 Hold the manifold tube assembly with one hand.

4.3.2 Grip the end of the cell with the other hand.

4.3.3 Give a quick, firm pull to remove the T-connector on the manifold tube assembly from the cell grommet on the cell assembly.

4.3.4 If necessary, repeat to disconnect the other cell feed.

4.4 Remove the cell assembly from the loops in the base sheet assembly.

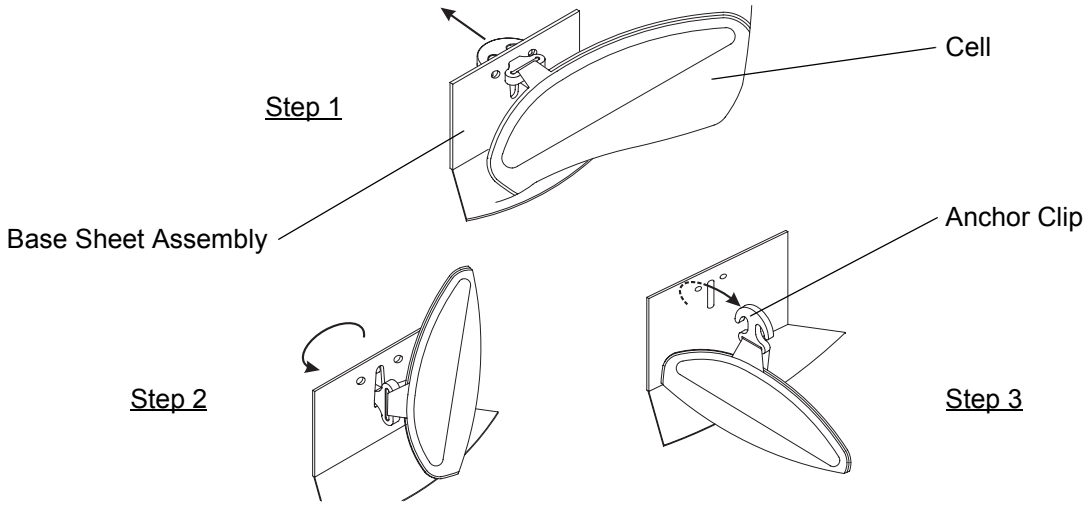


Figure 60 - Cell Removal From Base Sheet Assembly

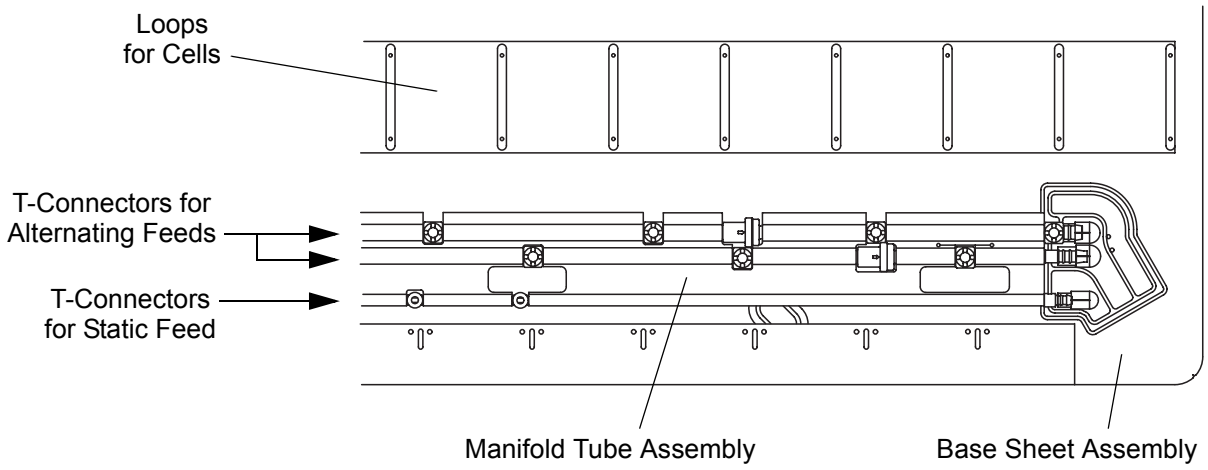


Figure 61 - Installing the Cell Assembly to the Manifold Tube Assembly

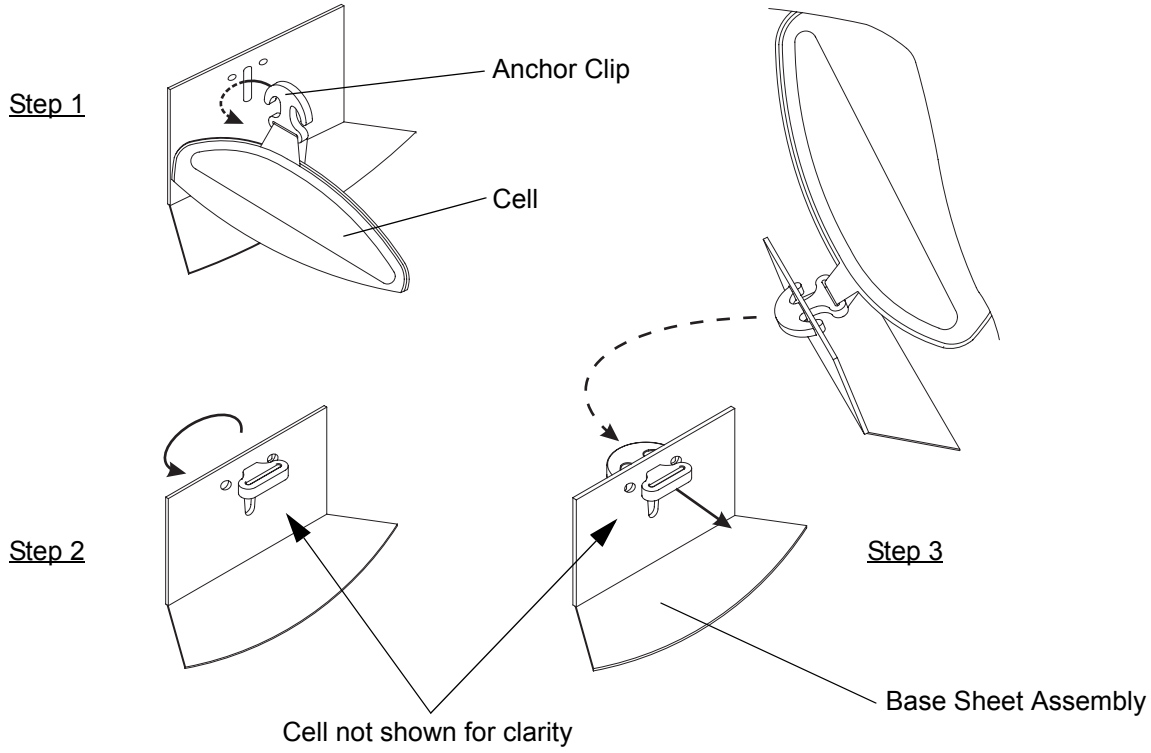


Figure 62 - Orientation of Partial Non-Return Valves

5 Installing a Cell Assembly

Note: *There are two different types of cell in the mattress (Refer to Figures 58 and 59). The 10 off torso cell assemblies (Fig 60, Item 10) in the centre of the mattress have two cell feeds, and are light blue. The 10 off standard cell assemblies (Fig 60, Item 20) at either end of the mattress have only one cell feed, and are dark blue. Make sure that the cell is the correct type for its position in the mattress.*

5.1 Feed the cell through the loops in the base sheet assembly, with the cell feed(s) adjacent to the manifold tube assembly.

Note: *Make sure the longitudinal welded seam is at the bottom of the cell assembly, facing towards the foot end of the mattress. Position the welded seam under the adjacent cell (Refer to Figures 58 and 59).*

5.2 Connect the cell feed(s) to the manifold tube assembly, as follows (Refer to Figure 61).

All 20 cell assemblies have a cell feed to one of the two alternating feeds in the manifold tube assembly. Adjacent cell assemblies are connected to opposite alternating feeds i.e. Cell 1 is connected to alternating feed “A”, Cell 2 is connected to alternating feed “B”, Cell 3 is connected to alternating feed “A”, etc. The 10 torso cell assemblies have a second cell feed which is connected to the static feed on the manifold tube assembly (Refer to Figures 59 and 61).

Note: *Installing the cell feeds is made easier if the cell grommet and/or T-connector is wetted with methylated spirit immediately prior to insertion.*

5.2.1 Push the T-connector on the relevant alternating feed on the manifold tube assembly into the “alternating” cell grommet on the cell assembly.

Note: *On torso cells, the “alternating” cell grommet is nearest the centre of the cell (Refer to Figure 59).*

5.2.2 On torso cells, push the T-connector on the static feed on the manifold tube assembly into the “static” cell grommet on the cell assembly.

Note: *The “static” cell grommet is nearest the end of the cell (Refer to Figure 59).*

5.3 At each end of the cell assembly (Fig 60, Items 10 or 20), install the anchor clip onto the base sheet assembly as follows (Refer to Figure 60):

5.3.1 Step 1: Push the anchor clip through the base sheet assembly from the centre of the mattress towards the outside.

5.3.2 Step 2: Rotate the anchor clip though approximately 90° so that the two pointed ends of the anchor clip are aligned with the two holes in the base sheet assembly

Note: *Rotate the anchor clip either clockwise or counterclockwise depending on the side of the mattress, so that there are no twists in the cell assembly or the anchor clip fixing strap.*

5.3.3 Step 3: Secure the anchor clip, by pulling it in towards the centre of the mattress, so that the two pointed ends of the anchor clip pass through the two holes in the base sheet assembly.

5.4 Install the top cover (Refer to Page 2, Section 3).

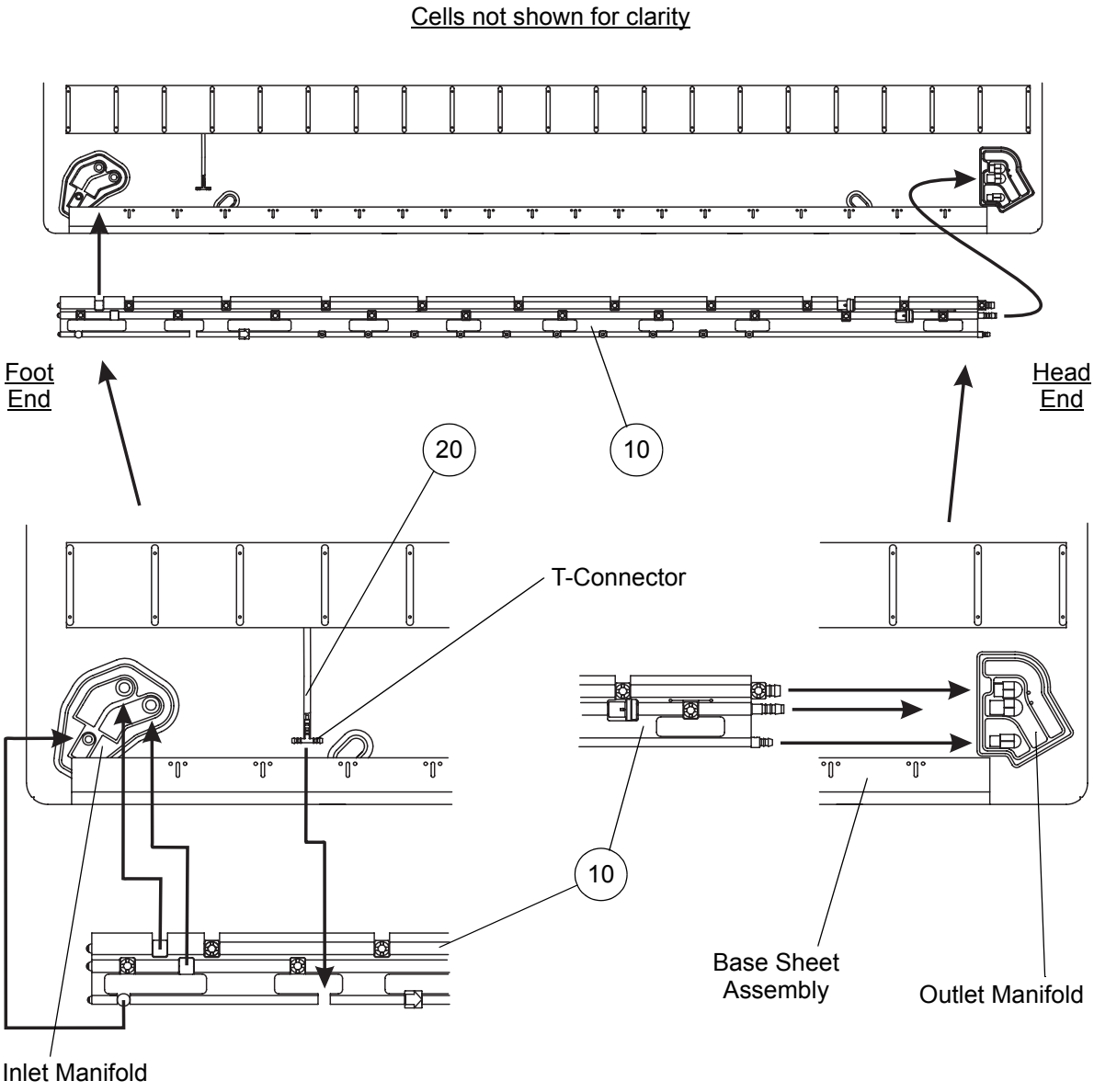


Figure 63 - Replacing the Manifold Tube Assembly

Table 31 - Manifold Tube Assembly Parts List

Item	Part Number	Description	Qty
10	PXA090	Manifold Tube Assembly	1
20	PXA059	Tube Assembly, Low Air Loss Patch	1

6 Removing the Manifold Tube Assembly

6.1 Remove the top cover (Refer to Page 2, Section 2).

6.2 On all 20 cell assemblies, remove the anchor clip from the base sheet assembly at the manifold tube assembly end ***ONLY***, as detailed in Para 4.2 (Refer to Page 5, Section 4).

6.3 On all 20 cell assemblies, disconnect the cell feed(s) from the T-connector(s) on the manifold tube assembly, as detailed in Para 4.3 (Refer to Page 5, Section 4).

6.4 Disconnect the low-air-loss (LAL) patch tube assembly (Fig 63, Item 20) from the manifold tube assembly (Fig 63, Item 10), by carefully removing both sides of the T-connector on the end of the LAL patch tube assembly from the tubes in the manifold tube assembly.

Note: *The T-connector is part of the tube assembly to the LAL patch, and not part of the manifold tube assembly.*

6.5 Disconnect the manifold tube assembly from the outlet manifold at the head end of the mattress, by pulling the three male connectors at the end of the manifold tube assembly horizontally out of the outlet manifold on the base sheet assembly.

Note: *The connectors are part of the manifold tube assembly and not part of the outlet manifold.*

6.6 Disconnect the manifold tube assembly from the inlet manifold at the foot end of the mattress, by pulling the three T-connectors at the end of the manifold tube assembly vertically out of the inlet manifold on the base sheet assembly.

Note: *The connectors are part of the manifold tube assembly and not part of the inlet manifold.*

6.7 Remove the manifold tube assembly (Fig 63, Item 10).

7 Installing the Manifold Tube Assembly

The manifold tube assembly (Fig 63, Item 10) comprises all the T-connectors to the 20 cell assemblies, and the three non-return valves. It does not include the T-connector on the LAL patch tube assembly.

7.1 Position the manifold tube assembly on top of the base sheet assembly, as shown in Figure 63.

Note: *Installing the manifold tube assembly is made easier if the connectors are wetted with methylated spirit immediately prior to insertion.*

7.2 Connect the manifold tube assembly to the inlet manifold at the foot end of the mattress, by pushing the three T-connectors at the end of the manifold tube assembly vertically into the inlet manifold on the base sheet assembly.

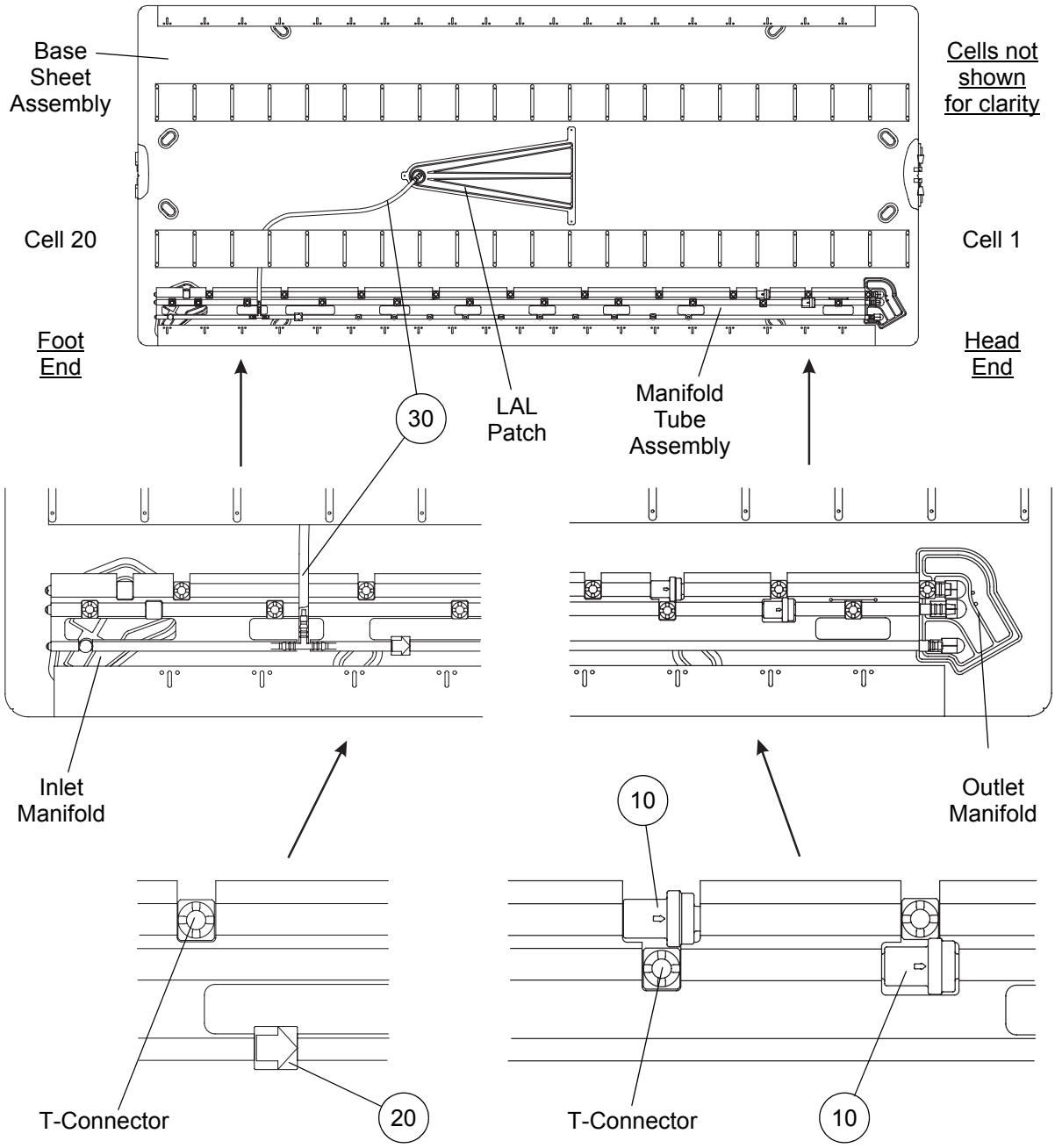
7.3 Connect the manifold tube assembly to the outlet manifold at the head end of the mattress, by pushing the three male connectors at the end of the manifold tube assembly horizontally into the outlet manifold on the base sheet assembly.

7.4 Connect the LAL patch tube assembly (Fig 63, Item 20) to the manifold tube assembly (Fig 63, Item 10), by carefully inserting both sides of the T-connector on the end of the LAL patch tube assembly into the tubes in the manifold tube assembly.

7.5 On all 20 cell assemblies, re-connect the cell feed(s) onto the T-connector(s) on the manifold tube assembly, as detailed in Para 5.2 (Refer to Page 7, Section 5).

7.6 On all 20 cell assemblies, install the anchor clip onto the base sheet assembly at the manifold tube assembly end, as detailed in Para 5.3 (Refer to Page 7, Section 5).

7.7 Install the top cover (Refer to Page 2, Section 2).



Note the orientation of the 3 Non-Return Valves (Items 10 and 20): the arrow on the Non-Return Valves always points to the head end of the mattress.

Figure 64 - Replacement of the Non-Return Valves and the LAL Patch Tube Assembly

Table 32 - Non-Return Valves and the LAL Patch Tube Assembly Parts List

Item	Part Number	Description	Qty
10	PXA335	Partial Non-Return Valve Assembly	2
20	627389	Non-Return Valve	1
30	PXA059	Tube Assembly, Low-Air-Loss Patch	1

8 Replacing the Non-Return Valves

8.1 There are two partial non-return valve assemblies (Fig 64, Item 10) at the head end of the mattress, and a single non-return valve (Fig 64, Item 20) at the foot end of the mattress:

8.1.1 To replace a partial non-return valve assembly at the head end of the mattress, carry out the procedure starting at Para 8.2.

8.1.2 To replace the non-return valve at the foot end of the mattress, carry out the procedure starting at Para 8.8.

Replacing the Partial Non-Return Valve Assembly at the Head End of the Mattress

8.2 Remove the top cover (Refer to Page 2, Section 2).

8.3 On cell assemblies 1 to 5 only (at the head end of the mattress), remove the anchor clip from the base sheet assembly at the manifold tube assembly end ***ONLY***, as detailed in Para 4.2 (Refer to Page 5, Section 4).

Note: *Cell 1 is at the head end of the mattress, and cell 20 is at the foot end.*

8.4 Carefully remove both ends of the partial non-return valve assembly (Fig 64, Item 10) from the manifold tube assembly.

8.5 Push the ends of the new partial non-return valve assembly (Fig 64, Item 10) into the manifold tube assembly.

CAUTION: Make sure that the arrow mark on the partial non-return valve assembly point towards the head end of the mattress. Mattress malfunction will occur if the partial non-return valve assembly is installed incorrectly (Refer to Figure 64).

Note: *Installing the partial non-return valve assembly is made easier if the parts are wetted with methylated spirit immediately prior to insertion. Do not allow excessive amounts of the methylated spirit into the body of the valve assembly.*

8.6 On cell assemblies 1 to 5, install the anchor clip onto the base sheet assembly at the manifold tube assembly end, as detailed in Para 5.3 (Refer to Page 7, Section 5).

8.7 Install the top cover (Refer to Page 2, Section 2).

Replacing the Non-Return Valve at the Foot End of the Mattress

8.8 Remove the top cover (Refer to Page 2, Section 2).

8.9 On cell assemblies 16 and 17 only (at the foot end of the mattress), remove the anchor clip from the base sheet assembly at the manifold tube assembly end ***ONLY***, as detailed in Para 4.2 (Refer to Page 5, Section 4).

Note: *Cell 1 is at the head end of the mattress, and cell 20 is at the foot end.*

8.10 Carefully remove both ends of the non-return valve (Fig 64, Item 20) from the manifold tube assembly.

8.11 Push the ends of the new non-return valve (Fig 64, Item 20) into the manifold tube assembly.

CAUTION: Make sure that the arrow mark on the non-return valve point towards the head end of the mattress. Mattress malfunction will occur if the non-return valve is installed incorrectly (Refer to Figure 64).

Note: *Installing the non-return valve is made easier if the parts are wetted with methylated spirit immediately prior to insertion. Do not allow excessive amounts of the methylated spirit into the body of the valve assembly.*

8.12 On cell assemblies 16 to 17, install the anchor clip onto the base sheet assembly at the manifold tube assembly end, as detailed in Para 5.3 (Refer to Page 7, Section 5).

8.13 Install the top cover (Refer to Page 2, Section 2).

9 Removing the Low-Air-Loss (LAL) Patch Tube Assembly

9.1 Remove the top cover (Refer to Page 2, Section 2).

9.2 On cell assemblies 17 and 18 only (at the foot end of the mattress), remove the anchor clip from the base sheet assembly at the manifold tube assembly end ***ONLY***, as detailed in Para 4.2 (Refer to Page 5, Section 4).

Note: *Cell 1 is at the head end of the mattress, and cell 20 is at the foot end.*

9.3 Disconnect the low-air-loss (LAL) patch tube assembly (Fig 64, Item 30) from the manifold tube assembly (Fig 63, Item 10), by carefully removing both sides of the T-connector on the end of the LAL patch tube assembly from the tubes in the manifold tube assembly.

Note: *The T-connector is part of the tube assembly to the LAL patch, and not part of the manifold tube assembly.*

9.4 On cell assemblies 13 and 14 (at the foot end of the mattress), move the middle of the cell assemblies apart to reveal the end of the low-air-loss (LAL) patch which is welded to the base sheet assembly (Refer to Figure 64).

9.5 Disconnect the LAL patch tube assembly (Fig 64, Item 30) from the side-entry grommet on the LAL patch.

9.6 Carefully pull one end of the LAL patch tube assembly through the cell retaining loop in the base sheet assembly, under cell assembly 18, and away from the mattress.

10 Installing the Low-Air-Loss (LAL) Patch Tube Assembly

The new low-air-loss (LAL) tube assembly has two connectors:

- A T-connector which connects to the manifold tube assembly.
- A straight connector which connects to the LAL patch on the base sheet assembly.

10.1 Put the LAL patch tube assembly (Fig 64, Item 30) in the correct position on the base sheet assembly, as follows:

10.1.1 Start from the outside of the mattress.

10.1.2 Pass the straight connector on the end of the LAL patch tube assembly over the top of the manifold tube assembly.

10.1.3 Carefully pass the straight connector on the LAL patch tube assembly under cell assembly 18 (at the foot end of the mattress) and through the cell retaining loop in the base sheet assembly.

Note: *Cell 1 is at the head end of the mattress, and cell 20 is at the foot end.*

10.1.4 On cell assemblies 13 and 14, move the middle of the cell assemblies apart to reveal the end of the LAL patch which is welded to the base sheet assembly.

10.1.5 Pull the straight connector on the LAL patch tube assembly underneath cell assemblies 17 to 14, until it is adjacent to the side-entry grommet on the LAL patch.

Note: *Installing the LAL patch tube assembly is made easier if the connectors are wetted with methylated spirit immediately prior to insertion.*

10.2 With cell assemblies 13 and 14 still separated, push the straight connector on the LAL patch tube assembly (Fig 64, Item 30) into the side-entry grommet on the LAL patch.

10.3 Connect the LAL patch tube assembly to the manifold tube assembly, by carefully inserting both sides of the T-connector on the end of the LAL patch tube assembly into the tubes in the manifold tube assembly.

10.4 On cell assemblies 17 and 18, install the anchor clip onto the base sheet assembly at the manifold tube assembly end, as detailed in Para 5.3 (Refer to Page 7, Section 5).

10.5 Re-position all cell assemblies evenly in the loops on the base sheet assembly, particularly the cell assemblies adjacent to the LAL patch.

10.6 Install the top cover (Refer to Page 2, Section 2).

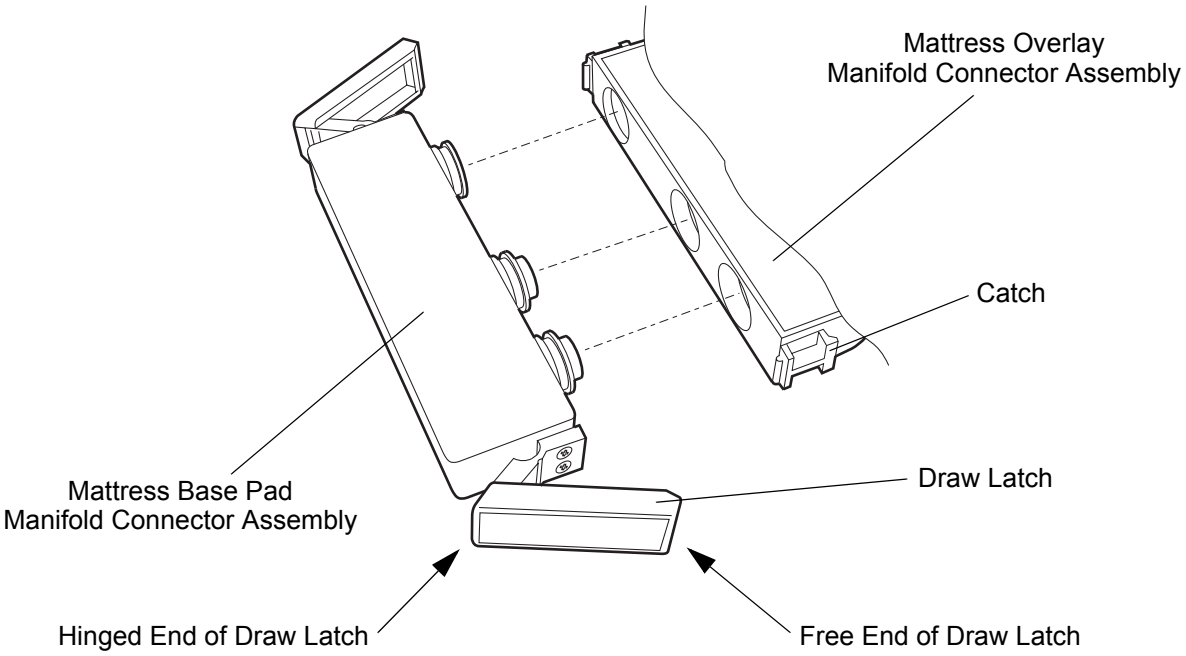


Figure 65 - Manifold Connector Assemblies on the Mattress Overlay and Mattress Base Pad

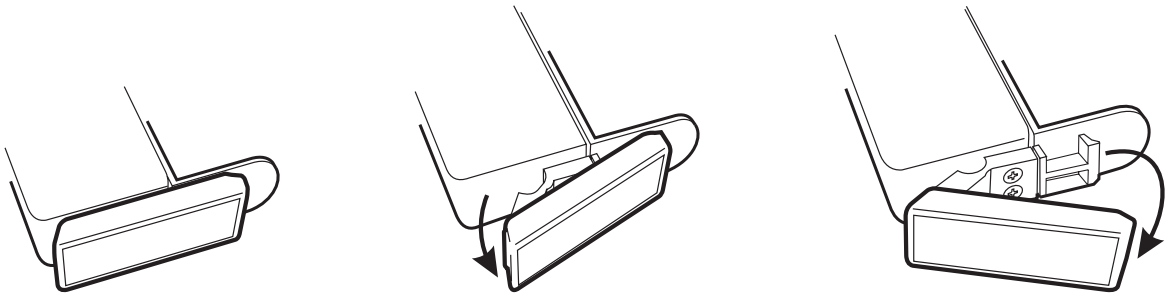


Figure 66 - Opening the Draw Latch on the Manifold Connector Assembly

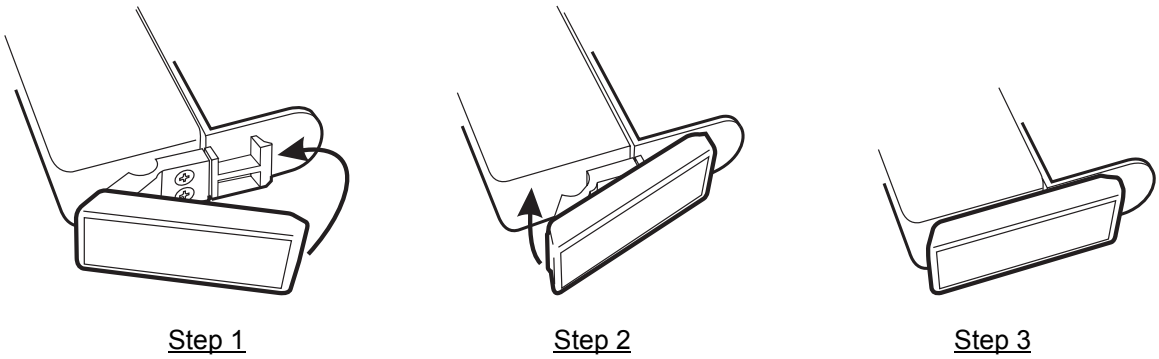


Figure 67 - Closing the Draw Latch on the Manifold Connector Assembly

11 Separating the Mattress Overlay from the Mattress Base Pad

There are two sets of zips on the mattress overlay:

- Two long zips which secure the top cover assembly to the mattress overlay.
- Two short zips which secure the mattress base pad to the mattress overlay.
- The two short zips are immediately below the two long zips.

There are zip flaps on the side of the top cover assembly which cover both sets of zips to prevent the ingress of contaminants.

Note: *It is not necessary to remove the top cover assembly to separate the mattress overlay from the mattress base pad.*

11.1 On the sides of the mattress, lift up the zip flap which covers the two sets of zips and undo the two short zips which secure the mattress overlay to the mattress base pad.

Note: *The two short zips are the lower of the two sets of zips.*

11.2 At the head end of the mattress, carefully lift the corner of the mattress overlay adjacent to the CPR assembly, to reveal the two manifold connector assemblies which connect the mattress overlay to the mattress base pad (Refer to Figure 65).

11.3 Open the two draw latches on the side of the manifold connector assembly on the mattress base pad, as follows (Refer to Figures 65 and 66):

11.3.1 Step 1: This shows the closed position of the draw latch.

11.3.2 Step 2: Lift the hinged end of the draw latch, so the draw latch is loose.

11.3.3 Step 3: Carefully pull the free end of the draw latch outwards and away from the manifold connector assembly.

11.4 Pull the two manifold connector assemblies apart (Refer to Figure 65).

11.5 Lift the mattress overlay away from the mattress base pad.

Note: *The manifold connector valves on the mattress overlay will automatically close when the mattress base pad is removed, allowing the mattress overlay to continue operating.*

12 Attaching the Mattress Overlay to the Mattress Base Pad

12.1 Position the mattress overlay on top of the mattress base pad, with the two manifold connector assemblies adjacent to each other.

12.2 Push the two manifold connector assemblies together (Refer to Figure 65).

Note: *Make sure there is no gap between the mating faces of the two manifold connector assemblies, particularly in the centre.*

12.3 Close the two draw latches on the side of the manifold connector assembly on the mattress base pad, as follows (Refer to Figures 65 and 66):

12.3.1 Step 1: Pull the free end of the draw latch over the catch on the manifold connector assembly on the mattress base pad.

12.3.2 Step 2: Push the hinged end of the draw latch down, so the draw latch pulls the two manifold connectors together and secures them.

12.3.3 Step 3: This shows the closed position of the draw latch.

12.4 Make sure the mattress overlay and mattress base pad are flat, and positioned correctly on top of each other.

12.5 On the sides of the mattress, lift up the zip flap and fasten the two short zips which secure the mattress overlay to the mattress base pad.

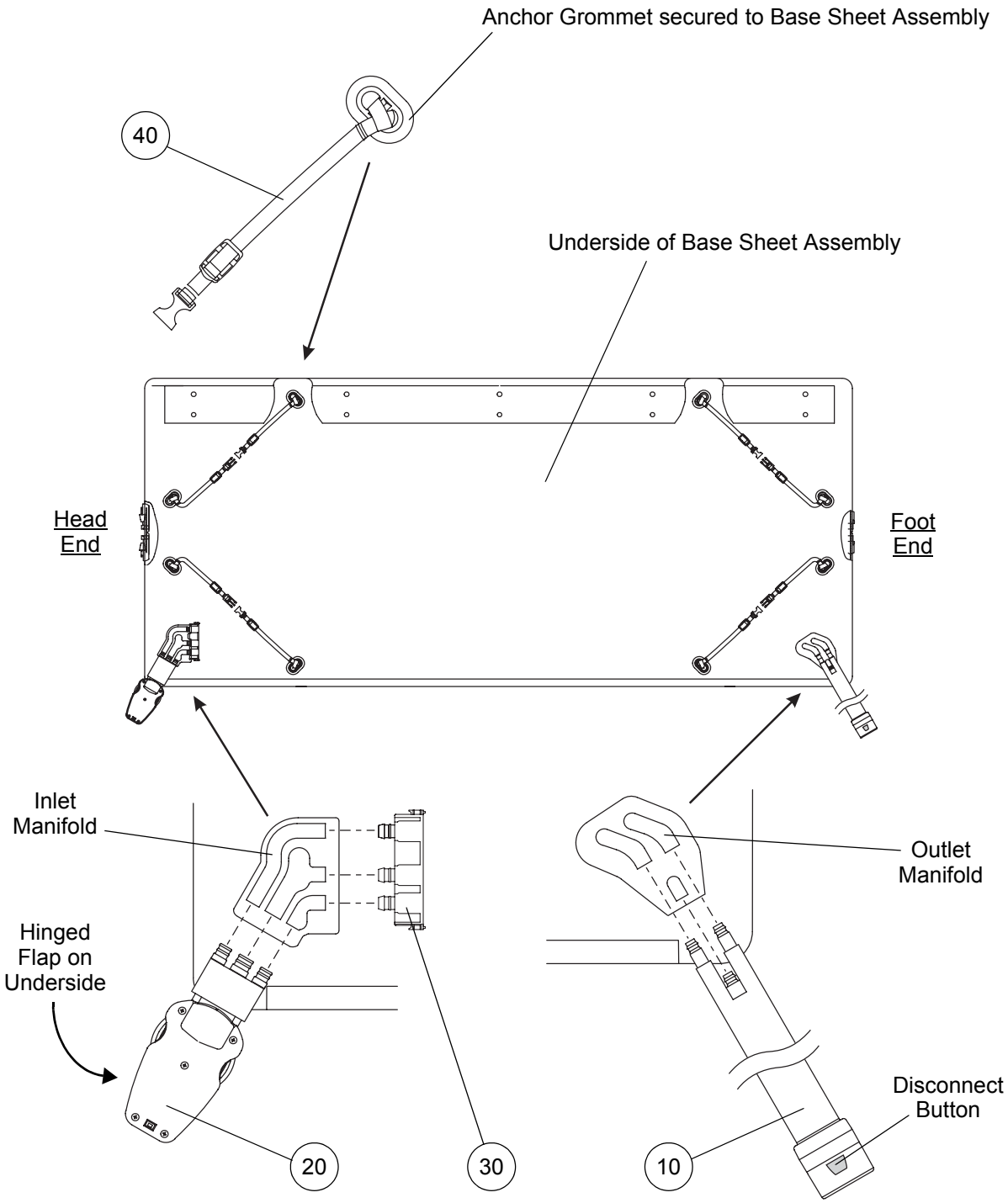


Figure 68 - Underside View of Mattress Overlay

13 Removing the Pump Tubeset Assembly

The pump tubeset assembly (Fig 68, Item 10) comprises:

- The 3-way connector which fits on the pump.
- The moulded 3-way tubeset.
- The three connectors at the mattress end of the tubeset.

13.1 If the mattress overlay is attached to the mattress base pad, separate the mattress overlay from the mattress base pad (Refer to Page 15, Section 11).

13.2 Turn the mattress overlay over so that underside of the base sheet assembly is on top (Refer to Figure 68).

13.3 Pull the three connectors on the end of the pump tubeset assembly (Fig 68, Item 10) out of the outlet manifold on the base sheet assembly, and remove the pump tubeset assembly.

14 Installing the Pump Tubeset Assembly

14.1 Make sure the underside of the base sheet assembly is on top.

14.2 Position the new pump tubeset assembly (Fig 68, Item 10) adjacent to the outlet manifold on the underside of the base sheet assembly.

Note: *Make sure the orientation of the pump tubeset assembly is correct. The disconnect button must be on the top of the pump connector (Refer to Figure 68).*

14.3 Push the three connectors on the end of the pump tubeset assembly (Fig 68, Item 10) into the outlet manifold on the base sheet assembly.

Note: *Installing the connectors on the pump tubeset assembly is made easier if the parts are wetted with methylated spirit immediately prior to insertion.*

14.4 Turn the mattress overlay over so that underside of the base sheet assembly is on the bottom.

14.5 If the mattress overlay was separated from the mattress base pad, re-attach the mattress overlay to the mattress base pad (Refer to Page 15, Section 12).

Table 33 - Pump Tubeset, CPR, Manifold Connector Assemblies Parts List

Item	Part Number	Description	Qty
10	PXA057	Pump Tubeset Assembly	1
20	PXA056	CPR Assembly	1
30	PXA074	Manifold Connector Assembly, Mattress Overlay	1
40	PXA073	Retaining Strap Assembly, Pair	4

15 Removing the CPR Assembly

The CPR (Cardio-Pulmonary Resuscitation) assembly (Fig 68, Item 20) comprises:

- The CPR unit.
- The short, moulded 3-way tubeset.
- The three connectors at the mattress end of the tubeset.

Note: *It is not necessary to remove the top cover assembly, or to separate the mattress overlay from the mattress base pad, in order to remove the CPR assembly.*

15.1 At the head end of the mattress adjacent to the CPR assembly, carefully lift up the zip flap, and then lift the corner of the mattress overlay away from the mattress base pad.

Note: *It may be necessary to undo the zip which secure the mattress overlay to the mattress base pad a short distance to make the CPR assembly more accessible.*

15.2 Pull the three connectors on the end of the CPR assembly (Fig 68, Item 20) out of the inlet manifold on the base sheet assembly, and remove the CPR assembly.

16 Installing the CPR Assembly

16.1 At the head end of the mattress adjacent to the CPR assembly, carefully lift up the zip flap, and then lift the corner of the mattress overlay away from the mattress base pad.

16.2 Position the new CPR assembly (Fig 68, Item 20) adjacent to the inlet manifold on the underside of the base sheet assembly.

Note: *Make sure the orientation of the CPR assembly is correct. The hinged flap on the front of the CPR unit must be on the underside, when looking directly at the inlet manifold on the underside of the base sheet assembly (Refer to Figure 68).*

16.3 Push the three connectors on the end of the CPR assembly (Fig 68, Item 20) into the inlet manifold on the base sheet assembly.

Note: *Installing the connectors on the CPR assembly is made easier if the parts are wetted with methylated spirit immediately prior to insertion.*

16.4 Make sure the mattress overlay and mattress base pad are flat, and positioned correctly on top of each other.

16.5 Make sure the zip(s) adjacent to the CPR assembly have been completely re-fastened.

17 Removing the Manifold Connector Assembly from the Mattress Overlay

17.1 If the mattress overlay is attached to the mattress base pad, separate the mattress overlay from the mattress base pad (Refer to Page 15, Section 11).

17.2 Turn the mattress overlay over so that underside of the base sheet assembly is on top (Refer to Figure 68).

17.3 Pull the three connectors on the end of the manifold connector assembly (Fig 68, Item 30) out of the inlet manifold on the base sheet assembly, and remove the manifold connector assembly.

18 Installing the Manifold Connector Assembly onto the Mattress Overlay

18.1 Position the new manifold connector assembly (Fig 68, Item 30) adjacent to the inlet manifold on the underside of the base sheet assembly.

Note: *The position of the three connectors means that the manifold connector assembly can only be installed the correct way round.*

18.2 Push the three connectors on the end of the manifold connector assembly (Fig 68, Item 30) into the inlet manifold on the base sheet assembly.

Note: *Installing the connectors on the manifold connector assembly is made easier if the parts are wetted with methylated spirit immediately prior to insertion.*

18.3 Turn the mattress overlay over so that underside of the base sheet assembly is on the bottom.

18.4 If the mattress overlay was separated from the mattress base pad, re-attach the mattress overlay to the mattress base pad (Refer to Page 15, Section 12).

19 Removing a Retaining Strap Assembly

19.1 If the mattress overlay is attached to the mattress base pad, separate the mattress overlay from the mattress base pad (Refer to Page 15, Section 11).

19.2 Turn the mattress overlay over so that underside of the base sheet assembly is on top (Refer to Figure 68).

19.3 Separate the clips, and untie or cut through the webbing on the retaining strap assembly (Fig 68, Item 40) where it is secured to the anchor grommet on the base sheet assembly, and remove the webbing from the anchor grommet.

19.4 Remove the mating retaining strap assembly.

20 Installing a Retaining Strap Assembly

There are four retaining strap assemblies on the mattress overlay. Each retaining strap assembly comprises two different retaining straps, as follows:

- Retaining strap “A” is a length of webbing with a side-release buckle. These are attached to the anchor grommets at the side of the base sheet assembly.
- Retaining strap “B” is a length of webbing with a mating receptacle. These are attached to the anchor grommets in the middle of the base sheet assembly.

Note: *Always replace both retaining straps, and make sure that the correct retaining straps are installed in the correct positions.*

20.1 Insert the plain end of the webbing on the retaining strap assembly (Fig 68, Item 40) into the anchor grommet, and under the anchor bar.

20.2 Feed the plain end of the webbing through until the end exits the opposite side of the anchor grommet.

20.3 Open the loop on the plain end of the webbing, and insert the other end of the webbing with the side-release buckle or mating receptacle through the loop.

20.4 Tighten the webbing on the anchor grommet to secure.

20.5 Repeat the procedure to install the mating retaining strap.

20.6 Turn the mattress overlay over so that underside of the base sheet assembly is on the bottom.

20.7 If the mattress overlay was separated from the mattress base pad, re-attach the mattress overlay to the mattress base pad (Refer to Page 15, Section 12).

21 Replacing the Base Sheet Assembly

21.1 If not already carried out, separate the mattress overlay from the mattress base pad (Refer to Page 15, Section 11).

21.2 Remove the top cover (Refer to Page 2, Section 2).

21.3 Remove all 20 cell assemblies (Refer to Page 5, Section 4).

21.4 Remove the low-air-loss (LAL) patch tube assembly (Refer to Page 12, Section 9).

21.5 Remove the manifold tube assembly (Refer to Page 9, Section 6).

21.6 Remove the pump tubeset assembly (Refer to Page 17, Section 13).

21.7 Remove the CPR assembly (Refer to Page 18, Section 15).

21.8 Remove the manifold connector assembly from the mattress overlay (Refer to Page 18, Section 17).

21.9 Remove all four retaining strap assemblies (Refer to Page 19, Section 19).

21.10 Discard the old base sheet assembly.

21.11 Place a new base sheet assembly (Table 34 Item 10 or 20) down on a flat surface.

Note: *Make sure the correct base sheet assembly is fitted. Table 34, Item 10 is for mattress overlays, and has only two zips which attach the top cover assembly to the base sheet assembly. Table 34, Item 20 is for mattress replacements, and has two additional zips to attach the mattress overlay to the mattress base pad.*

21.12 Install all four retaining strap assemblies (Refer to Page 19, Section 20).

21.13 Install the manifold connector assembly onto the mattress overlay (Refer to Page 18, Section 18).

21.14 Install the CPR assembly (Refer to Page 18, Section 16).

21.15 Install the pump tubeset assembly (Refer to Page 17, Section 14).

21.16 Install the manifold tube assembly (Refer to Page 9, Section 7).

21.17 Install the low-air-loss (LAL) patch tube assembly (Refer to Page 12, Section 10).

21.18 Install all 20 cell assemblies (Refer to Page 7, Section 5).

21.19 Install the top cover (Refer to Page 2, Section 3).

21.20 If the mattress overlay was separated from the mattress base pad, re-attach the mattress overlay to the mattress base pad (Refer to Page 15, Section 12).

Table 34 - Base Sheet Assembly Parts List

Item	Part Number	Description	Qty
10	PXA170	Base Sheet Assembly, for Mattress Overlay only	1
20	PXB170	Base Sheet Assembly, for Mattress Replacement only	1

22 Press Stud Replacement

22.1 Make sure that the two halves of the die set (Fig 69, Item 20) are installed in the jaws of the hand press tool (Fig 69, Item 10).

22.2 Remove the old press stud parts from the mattress, if necessary using side-cutters, taking care not to damage the mattress fabric.

22.3 Place the new stud post (Table 35, Item 30) in the location hole in the assembly where it is to be fitted.

Note: *Check with similar studs for the correct position.*

22.4 Position the stud post and assembly in the hand press tool.

22.5 Depending on which is to be fitted, fit a stud cap (Table 35, Item 40) or stud socket (Table 35, Item 50) onto the stud post, and firmly squeeze the handles of the hand press tool together.

22.6 Remove the secured press stud assembly from the hand press tool.

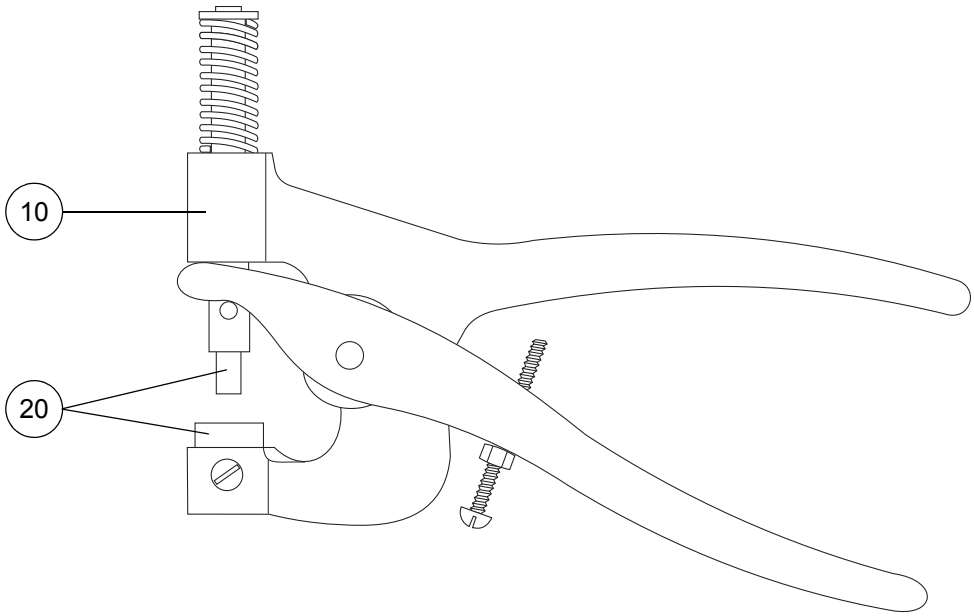


Figure 69 - Press Stud Tool

Table 35 - Press Stud Parts List

Item	Part Number	Description	Qty
10	MIS143	Hand Press Tool	1
20	MIS142	Die Set (for Hand Press Tool - Item 10)	1
30	FAS169	Stud Post, Schaeffer Plastic	A/R
40	FAS170	Stud Cap, Schaeffer Plastic	A/R
50	FAS171	Stud Socket, Schaeffer Plastic	A/R

CHAPTER 7

MATTRESS BASE PAD REPAIR

1 General

This chapter details repair procedures for the **Auto Logic** mattress base pad. All repairs should be carried out by Huntleigh approved service personnel.

To carry out the repair procedures, fully deflate the mattress first, as follows:

1.1 Disconnect the tubeset between the mattress and the pump.

1.2 Operate the CPR (Cardio-Pulmonary Resuscitation) unit to deflate the mattress.

1.3 Separate the mattress overlay from the mattress base pad first (Refer to Chapter 6 “Mattress Overlay Repair”, Page 15, Section 11).

After carrying out a service or any repairs, the mattress must be tested for serviceability. Carry out an inflation test on the mattress in accordance with Chapter 4 “Testing”, Page 29, Section 19.

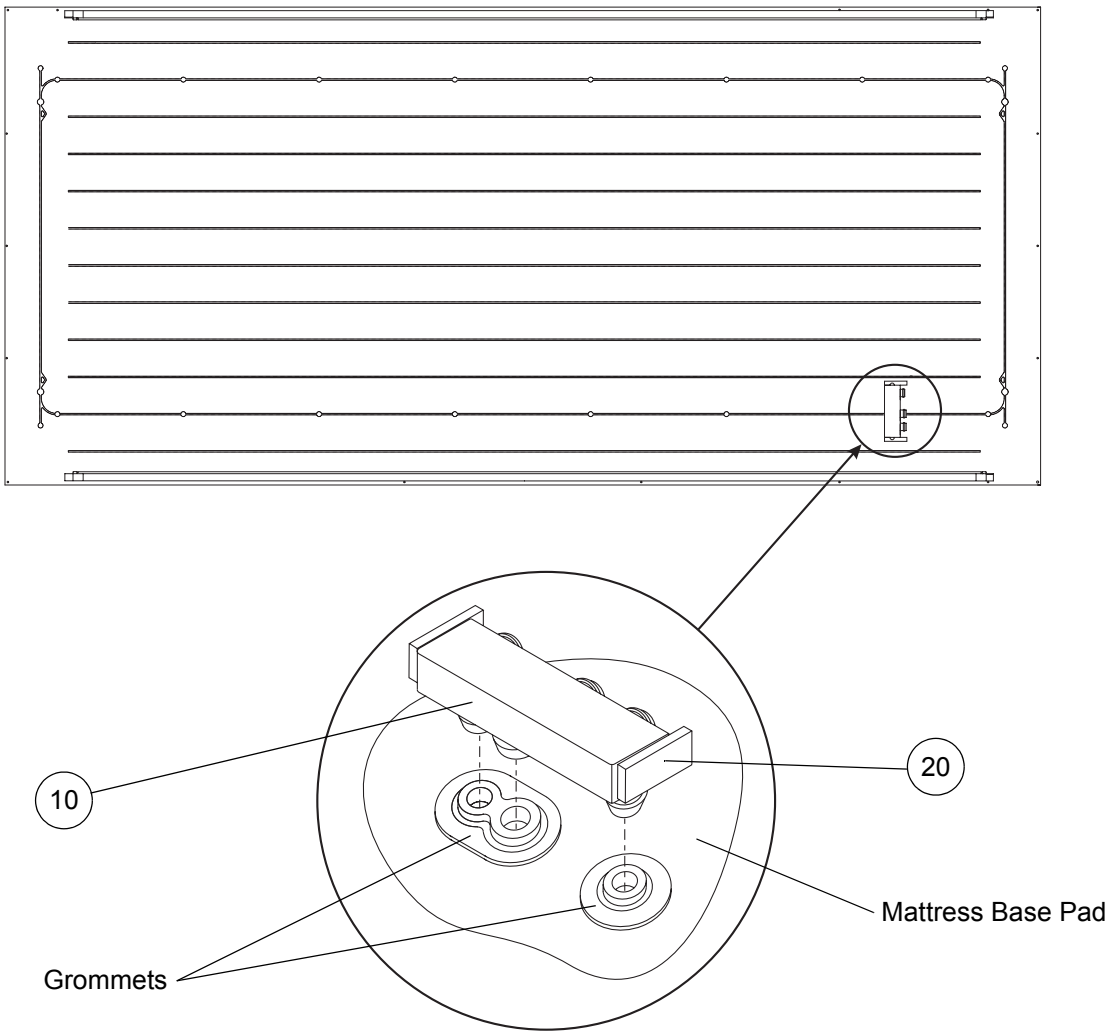
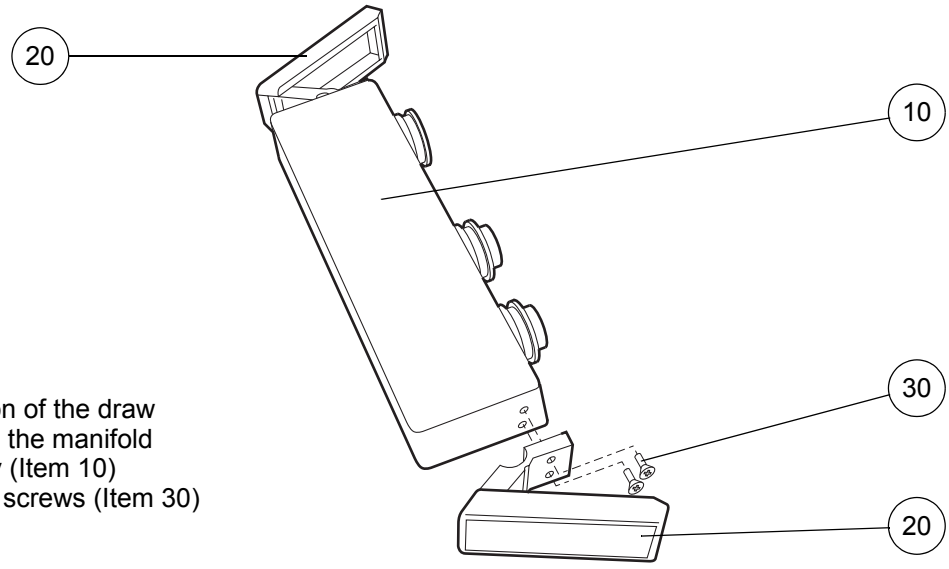


Figure 70 - Replacing the Manifold Connector Assembly on the Mattress Base Pad



Note:
Check the orientation of the draw latches (Item 20) on the manifold connector assembly (Item 10) before installing the screws (Item 30)

Figure 71 - Replacing the Draw Latches on the Manifold Connector Assembly

2 Removing the Manifold Connector Assembly from the Mattress Base Pad

2.1 If the mattress overlay is attached to the mattress base pad, separate the mattress overlay from the mattress base pad (Refer to Chapter 6 “Mattress Overlay Repair”, Page 15, Section 11).

2.2 Pull the three connectors on the end of the manifold connector assembly (Fig 70, Item 10) out of the three grommets in the mattress base pad, and remove the manifold connector assembly.

3 Installing the Manifold Connector Assembly onto the Mattress Base Pad

3.1 Position the new manifold connector assembly (Fig 70, Item 10) adjacent to the three grommets on the mattress base pad.

Note: *The position of the three connectors means that the manifold connector assembly can only be installed the correct way round.*

3.2 Push the three connectors on the end of the manifold connector assembly (Fig 70, Item 10) into the three grommets in the mattress base pad.

Note: *Installing the connectors on the manifold connector assembly is made easier if the parts are wetted with methylated spirit immediately prior to insertion.*

3.3 If the mattress overlay was separated from the mattress base pad, re-attach the mattress overlay to the mattress base pad (Refer to Chapter 6 “Mattress Overlay Repair”, Page 15, Section 12).

4 Replacing the Draw Latches on the Manifold Connector Assembly

4.1 If the mattress overlay is attached to the mattress base pad, separate the mattress overlay from the mattress base pad (Refer to Chapter 6 “Mattress Overlay Repair”, Page 15, Section 11).

Note: *It is not necessary to remove the manifold connector assembly from the mattress base pad in order to replace the draw latches.*

4.2 Remove the two screws (Fig 71, Item 30) and the draw latch (Fig 71, Item 20) from the side of the manifold connector assembly (Fig 71, Item 10).

4.3 Discard the old draw latch.

4.4 Put the new draw latch (Fig 71, Item 20) in position on the side of the manifold connector assembly (Fig 71, Item 10).

Note: *Make sure the orientation of the draw latch is correct.*

4.5 Install the two screws (Fig 71, Item 30) to secure the draw latch.

4.6 Repeat for the other draw latch.

4.7 If the mattress overlay was separated from the mattress base pad, re-attach the mattress overlay to the mattress base pad (Refer to Chapter 6 “Mattress Overlay Repair”, Page 15, Section 12).

Table 36 - Manifold Connector Assembly Parts List

Item	Part Number	Description	Qty
10	PXA325	Manifold Connector Assembly, Mattress Base Pad	1
20	PXA358	Draw Latch	2
30	PXA359	Screw, 2.5mm dia x 10mm Csk Head	4

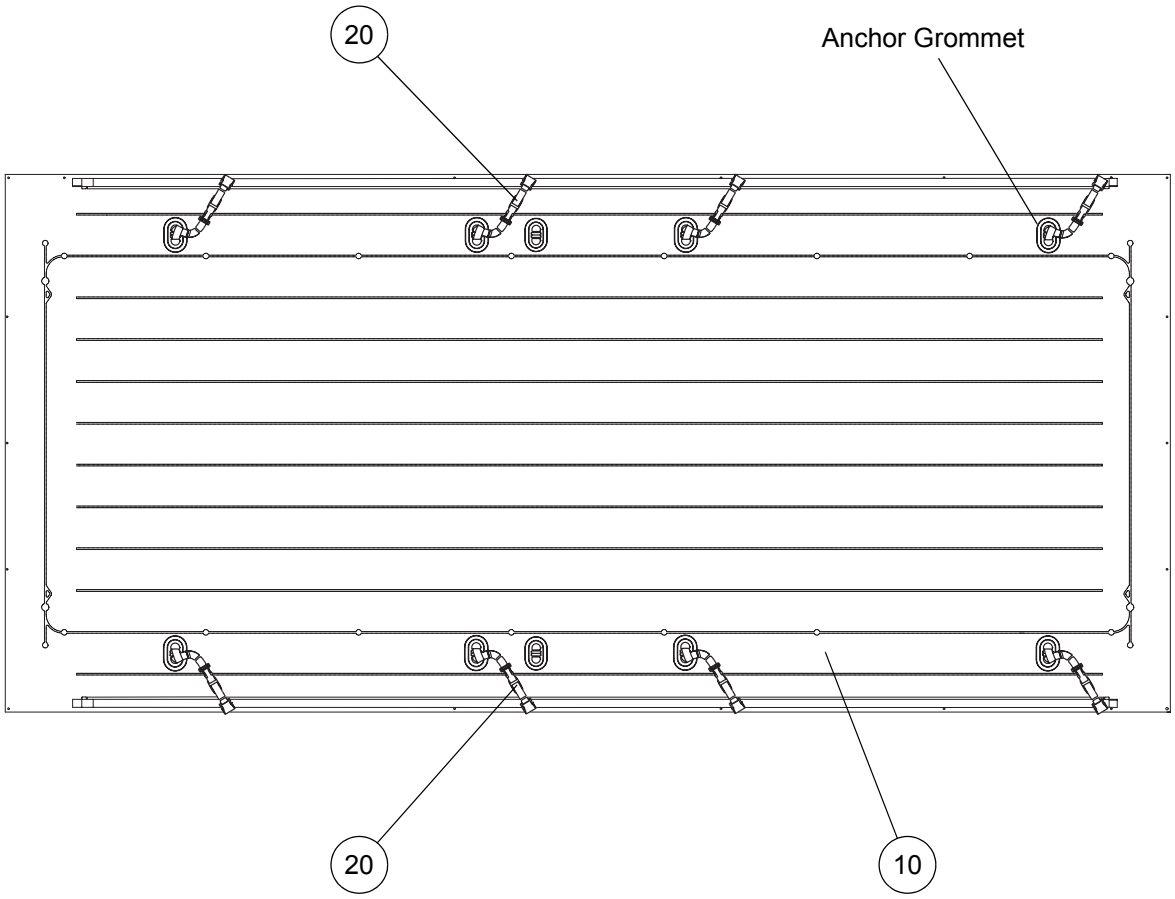


Figure 72 - Replacing the Retaining Strap Assemblies

Table 37 - Base Pad and Retaining Strap Asseblies Parts List

Item	Part Number	Description	Qty
10	PXB055	Base Pad Sub-Assembly	1
20	PXB073	Retaining Strap Assembly	8

5 Removing a Retaining Strap Assembly

5.1 Turn the mattress over so that underside of the base pad is on top (Refer to Figure 72).

5.2 Separate the clips, and untie or cut through the webbing on the retaining strap assembly (Fig 72, Item 20) where it is secured to the anchor grommet on the base pad, and remove the webbing from the anchor grommet.

6 Installing a Retaining Strap Assembly

Each retaining strap comprises:

- A length of webbing.
- A side release buckle (male) and a mating receptacle (female).

6.1 Insert the plain end of the webbing on the retaining strap assembly (Fig 72, Item 20) into the anchor grommet, and under the anchor bar.

6.2 Feed the plain end of the webbing through until the end exits the opposite side of the anchor grommet.

6.3 Open the loop on the plain end of the webbing, and insert the other end of the webbing with the side-release buckle or mating receptacle through the loop.

6.4 Tighten the webbing on the anchor grommet to secure.

6.5 Turn the mattress overlay over so that underside of the base sheet assembly is on the bottom.

7 Replacing the Base Pad Sub-Assembly

7.1 If not already carried out, separate the mattress overlay from the mattress base pad (Refer to Chapter 6 “Mattress Overlay Repair”, Page 15, Section 11).

7.2 Remove the manifold connector assembly from the mattress base pad (Refer to Page 3, Section 2).

7.3 Remove all eight retaining strap assemblies (Refer to Page 5, Section 5).

7.4 Discard the old base pad sub-assembly (Fig 72, Item 10).

7.5 Place a new base pad sub-assembly (Fig 72, Item 10) down on a flat surface.

7.6 Install all eight retaining strap assemblies (Refer to Page 5, Section 6).

7.7 Install the manifold connector assembly onto the mattress base pad (Refer to Page 3, Section 3).

7.8 If the mattress overlay was separated from the mattress base pad, re-attach the mattress overlay to the mattress base pad (Refer to Chapter 6 “Mattress Overlay Repair”, Page 15, Section 12).

8 Press Stud Replacement

8.1 To replace the press studs, refer to the procedure in the Mattress Overlay Repair section (Refer to Chapter 6 “Mattress Overlay Repair”, Page 21, Section 22).

CHAPTER 8

SEAT CUSHION REPAIR

1 General

This chapter details repair procedures for the **Aura Logic** seat cushion. All repairs should be carried out by Huntleigh approved service personnel.

To carry out the repair procedures, fully deflate the seat cushion first, as follows:

1.1 Disconnect the tubeset between the seat cushion and the pump.

1.2 Depress the two small dump valves on the underside of the seat cushion base cover to deflate the seat cushion.

After carrying out a service or any repairs, the mattress must be tested for serviceability. Carry out an inflation test on the seat cushion in accordance with Chapter 4 “Testing”, Page 29, Section 19.

2 Removing the Top Cover Assembly

2.1 Undo the zip which secures the top cover assembly (Table 38, Item 10) to the base sheet assembly.

2.2 Remove the top cover assembly.

3 Installing the Top Cover Assembly

3.1 Position the top cover assembly (Table 38, Item 10) over the base sheet assembly, with the logo uppermost.

3.2 Fasten the zip to secure the top cover assembly to the base sheet assembly.

Table 38 - Top Cover Parts List

Item	Part Number	Description	Qty
10	PXS062	Top Cover Assembly	1

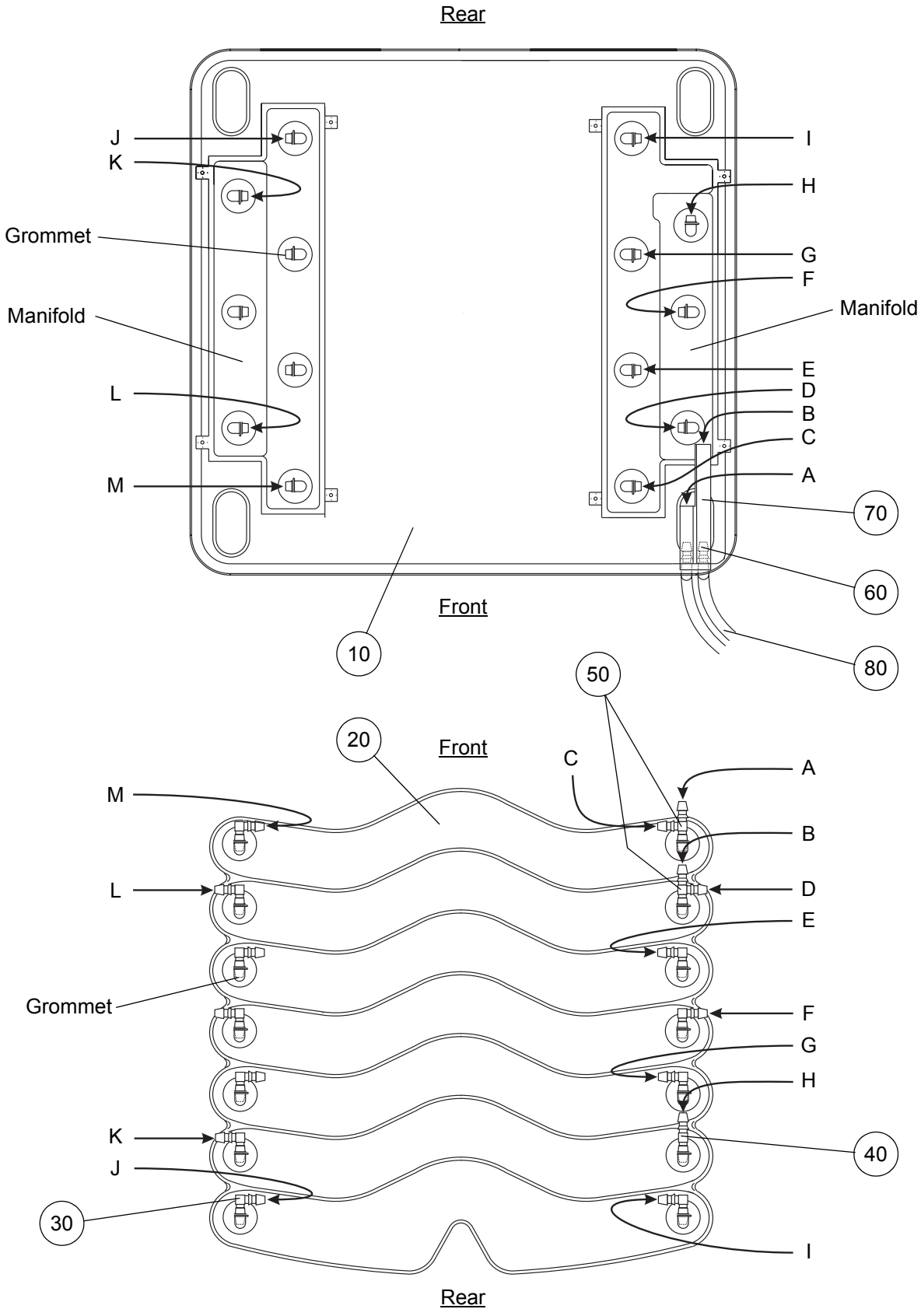


Figure 73 - Replacing the Welded Cell Assembly

4 Removing the Welded Cell Assembly

The seven cells in the seat cushion are not individual, replaceable cells but are manufactured as a single, welded assembly which can only be replaced as a single, complete item (the welded cell assembly).

There are four short manifolds welded into the base sheet assembly, two at each side of the welded cell assembly. The welded cell assembly is connected to the manifolds via 14 connectors (elbow, straight and “T”).

4.1 Remove the top cover assembly (Refer to Page 1, Section 2).

4.2 Carefully pull the two T-connectors (Fig 73, Item 50) out of the internal tube assembly (Fig 73, Item 70).

4.3 Carefully pull the 14 connectors (Fig 73, Items 30, 40 and 50) out of the grommets on the manifolds on the base assembly (Fig 73, Item 10).

Note: *Keep all 14 connectors in the grommets on the welded cell assembly (Fig 73, Item 20).*

4.4 Carefully pull all 14 connectors (Fig 73, Items 30, 40 and 50) out of the grommets in the welded cell assembly (Fig 73, Item 20).

5 Installing the Welded Cell Assembly

Note: *The labels by each connector on Figure 73, e.g. “A”, “B”, etc., are an aid to installing the welded cell assembly, by showing which connector on the welded cell assembly is connected to which grommet on the base assembly i.e. “A” to “A”, etc.*

5.1 Put the base assembly (Fig 73, Item 10) and the welded cell assembly (Fig 73, Item 20) down with the grommets pointing upwards.

Note: *Installing the connectors is made easier if the parts are wetted with methylated spirit immediately prior to insertion.*

5.2 Push the following connectors into the grommets on the welded cell assembly:

5.2.1 The single straight connector (Fig 73, Item 40), labelled “H”.

5.2.2 The two T-connectors (Fig 73, Item 50), labelled “C” and “D”.

5.2.3 The 11 elbow connectors (Fig 73, Item 30), labelled “E” to “G” and “I” to “M”.

Note: *Make sure the orientation of each of the 14 connectors is exactly as shown in Figure 73.*

Table 39 - Welded Cell Assembly Parts List

Item	Part Number	Description	Qty
10	PXS059	Base Assembly	1
20	PXS056	Cell Assembly, Welded	1
30	403305	Connector, Elbow	11
40	PXS302	Connector, Straight	1
50	401300	T-Connector	2
60	PXS309	Connector, Stepped	2
70	PXS067	Tube Assembly, Internal	1
80	PXS165	Pump Tubeset Assembly	1

5.3 Turn the welded cell assembly over so that the connectors are on the bottom.

5.4 Position the welded cell assembly on top of the base assembly.

Note: *Make sure the front of the welded cell assembly is directly above the front of the base assembly (Refer to Figure 73).*

5.5 Push the two T-connectors (Fig 73, Item 50) into the ends of the internal tube assembly (Fig 73, Item 70), labelled “A” and “B”.

5.6 Push the 14 connectors on the welded cell assembly into the corresponding grommet in the manifolds on the base assembly (Fig 73, Item 10), labelled “C” to “M”.

5.7 Install the top cover assembly (Refer to Page 1, Section 3).

6 Removing the Pump Tubeset Assembly

Note: *It is not necessary to remove the top cover assembly to remove the pump tubeset assembly.*

6.1 Carefully pull the two tubes on the pump tubeset assembly (Fig 73, Item 80) off of the two stepped connectors (Fig 73, Item 60), which are attached to the internal tube assembly (Fig 73, Item 70).

Note: *Leave the two stepped connectors and internal tube assembly connected to the seat cushion.*

7 Installing the Pump Tubeset Assembly

7.1 Push the two tubes on the pump tubeset assembly (Fig 73, Item 80) onto the two stepped connectors (Fig 73, Item 60), which are attached to the internal tube assembly (Fig 73, Item 70), and remove the pump tubeset assembly.

Note: *Installing the connectors is made easier if the parts are wetted with methylated spirit immediately prior to insertion.*

Note: *The orientation of the two tubes on the pump tubeset assembly is not important.*

8 Removing a Retaining Strap Assembly

8.1 Turn the seat cushion over so that retaining strap assemblies (Fig 74, Item 10) are on top.

8.2 Separate the clips, and untie or cut through the webbing on the retaining strap assembly where it is secured to the anchor grommet on the base assembly, and remove the webbing from the anchor grommet.

8.3 Remove the mating retaining strap assembly.

9 Installing a Retaining Strap Assembly

There are two retaining strap assemblies on the seat cushion, and each one comprises two different retaining straps. Both retaining straps have both a side-release buckle and a mating receptacle: one has the side-release buckle at the end of the long strap and the other has the mating receptacle at the end of the long strap.

Note: *Always replace both retaining straps, and make sure that the correct retaining straps are installed in the correct positions (Refer to Figure 74).*

9.1 Insert the plain end of the webbing on the retaining strap assembly (Fig 74, Item 10) into the anchor grommet, and under the anchor bar.

9.2 Feed the plain end of the webbing through until the end exits the opposite side of the anchor grommet.

9.3 Open the loop on the plain end of the webbing, and insert the other end of the webbing with the side-release buckle or mating receptacle through the loop.

9.4 Tighten the webbing on the anchor grommet to secure.

9.5 Repeat the procedure to install the mating retaining strap.

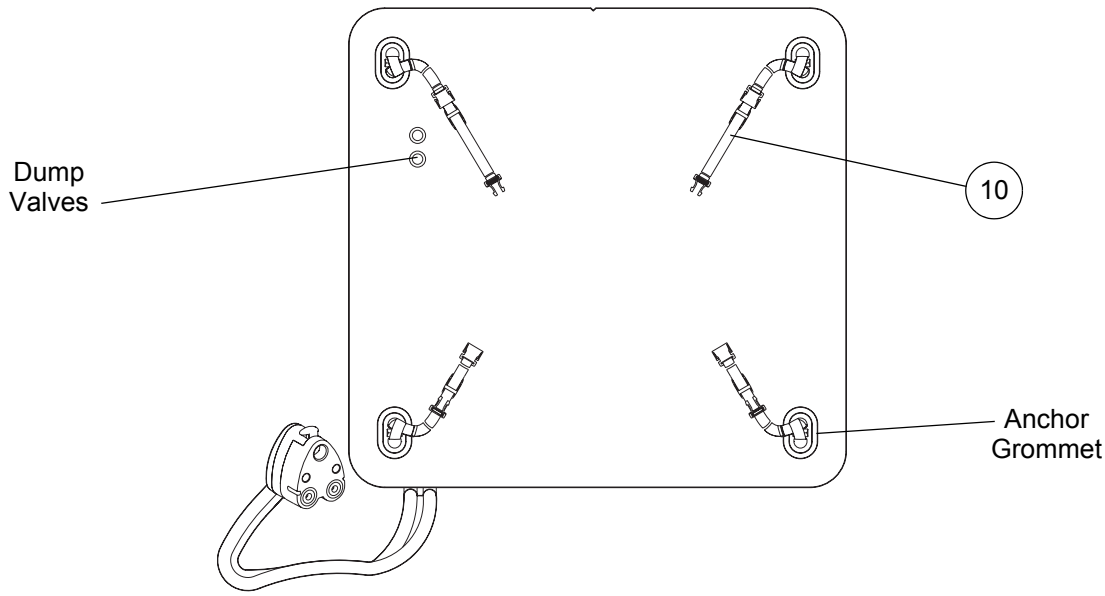


Figure 74 - Replacing a Retaining Strap Assembly

Table 40 - Retaining Strap Assembly Parts List

Item	Part Number	Description	Qty
10	PXS066	Retaining Strap Assembly, Pair	2

10 Replacing the Base Assembly

10.1 Remove the top cover assembly (Refer to Page 1, Section 2).

10.2 Remove the pump tubeset assembly from the base assembly (Refer to Page 4, Section 6).

10.3 Remove the two stepped connectors (Fig 73, Item 60) and internal tube assembly (Fig 73, Item 70) from the base assembly.

10.4 Remove the welded cell assembly from the base assembly (Refer to Page 3, Section 4).

Note: *Make sure all 14 connectors (Fig 73, Items 30, 40 and 50) are removed from the grommets on the manifolds on the base assembly (Fig 73, Item 10).*

10.5 Remove both retaining strap assemblies (Refer to Page 4, Section 8).

10.6 Discard the old base assembly.

10.7 Place a new base assembly (Table 41, Item 10) down on a flat surface.

10.8 Install the welded cell assembly onto the base assembly (Refer to Page 3, Section 5).

10.9 Push the internal tube assembly (Fig 73, Item 70) onto the two T-connectors (Fig 73, Item 50) on the welded cell assembly, labelled “A” and “B”.

Note: *Refer to Figure 73 for the orientation of the internal tube assembly.*

10.10 Push the two stepped connectors (Fig 73, Item 60) into the ends of the internal tube assembly.

10.11 Install the pump tubeset assembly onto the stepped connectors (Refer to Page 4, Section 7).

10.12 Install both retaining strap assemblies (Refer to Page 4, Section 9).

10.13 Install the top cover assembly (Refer to Page 1, Section 3).

Table 41 - Base Assembly Parts List

Item	Part Number	Description	Qty
10	PXS059	Base Assembly	1

CHAPTER 9

INTELLIGENT BATTERY PACK ASSEMBLY

1 General

An optional intelligent battery pack is available which allows the pump to be used independently of the mains/power supply. The battery pack slides onto the base of the pump.

2 Installing and Removing the Battery Pack

2.1 To install the battery pack onto the pump (Refer to Figure 75):

2.1.1 Remove the battery socket cover from the base of the pump.

2.1.2 From the front of the pump, slide the battery pack over the guides on the base of the pump, and click into place.

2.2 To remove the battery pack from the pump (Refer to Figure 75):

2.2.1 Depress the **Reset/Status Latch** at the rear of the pump/battery pack.

2.2.2 Slide the battery out from the base of the pump, towards the front of the pump.

2.2.3 Install the battery socket cover onto the base of the pump.

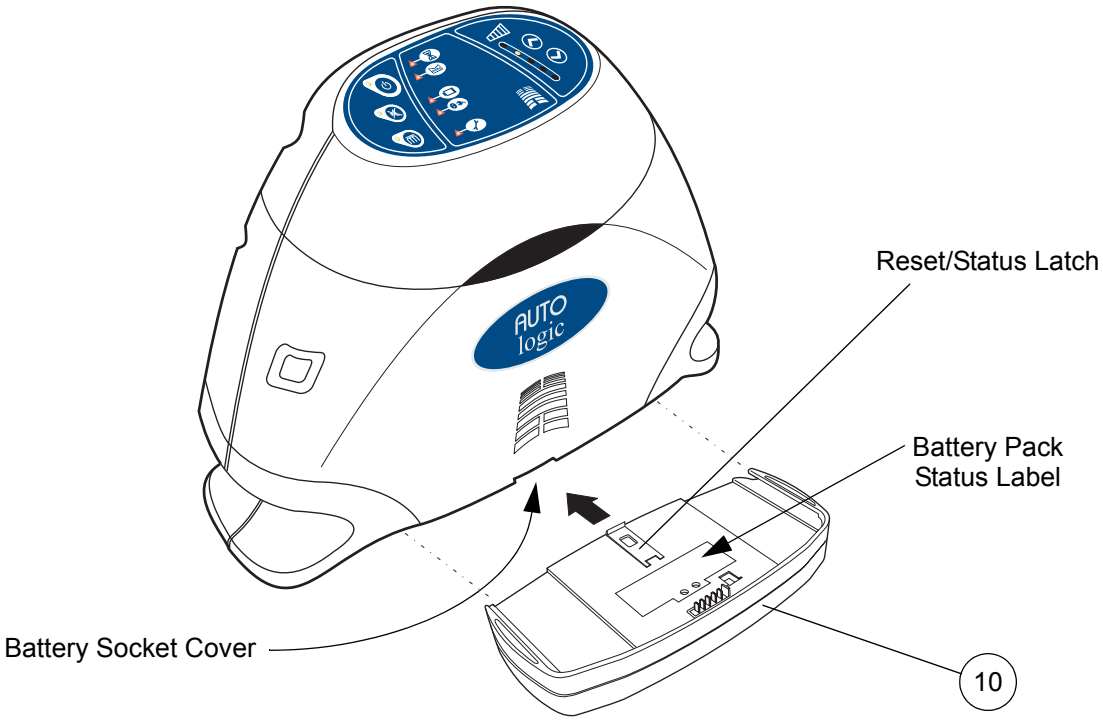


Figure 75 - Installing the Intelligent Battery Pack Assembly

Table 42 - Intelligent Battery Pack Assembly Parts List

Item	Part Number	Description	Qty
10	ABP600	Intelligent Battery Pack Assembly	1

3 Checking the Status of the Battery Pack

Battery Pack Status Label

Refer to Figure 75 for the position of the battery pack status label.

Refer to Figure 76 for details of the LED indicators and symbols on the battery pack status label.

To Check the Battery Pack Status (Refer to Figures 75 and 76)

3.1 Remove the battery pack from the pump unit (Refer to Page 1, Section 2).

3.2 Press the **Reset/Status Latch**, which will activate the two LED indicators (**LED 1** and **LED 2**) on the battery pack status label.

3.3 Refer to Chapter 2 “Troubleshooting”, Page 11, Section 7 for the particular status and fault conditions indicated by the two LED indicators.

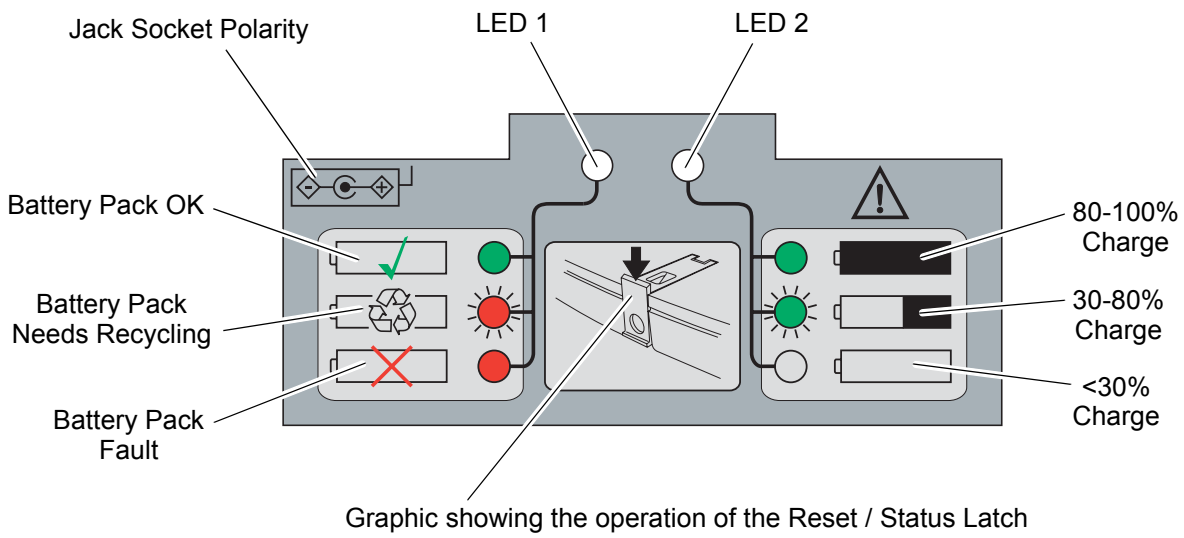


Figure 76 - Battery Pack Status Label

4 Battery Pack Storage

If the battery pack is to be put into long term storage it should be recharged at least once every 3-6 months.

5 Battery Pack Disposal

If the battery pack status indicates that it is faulty or needs recycling, then it should be returned to the Huntleigh Service Department to be recycled.

WARNING: DO NOT DISPOSE OF THE BATTERY PACK IN A DUSTBIN.

6 Recharging the Battery Pack

Note: *It is normal for the battery pack and charger to get warm during use. Avoid recharging the battery pack near a source of heat or in direct sunlight.*

6.1 The battery pack is automatically recharged whenever it is installed on a pump which is connected to a mains/power supply.

6.2 Alternatively the battery pack can be recharged away from the pump by connecting it to the battery charger (Refer to Figure 77).

6.3 The approximate times to recharge the battery pack are as follows:

- Typical time = 5 hours.
- Maximum time = 8 hours.

Note: *These times apply to both methods of recharging.*

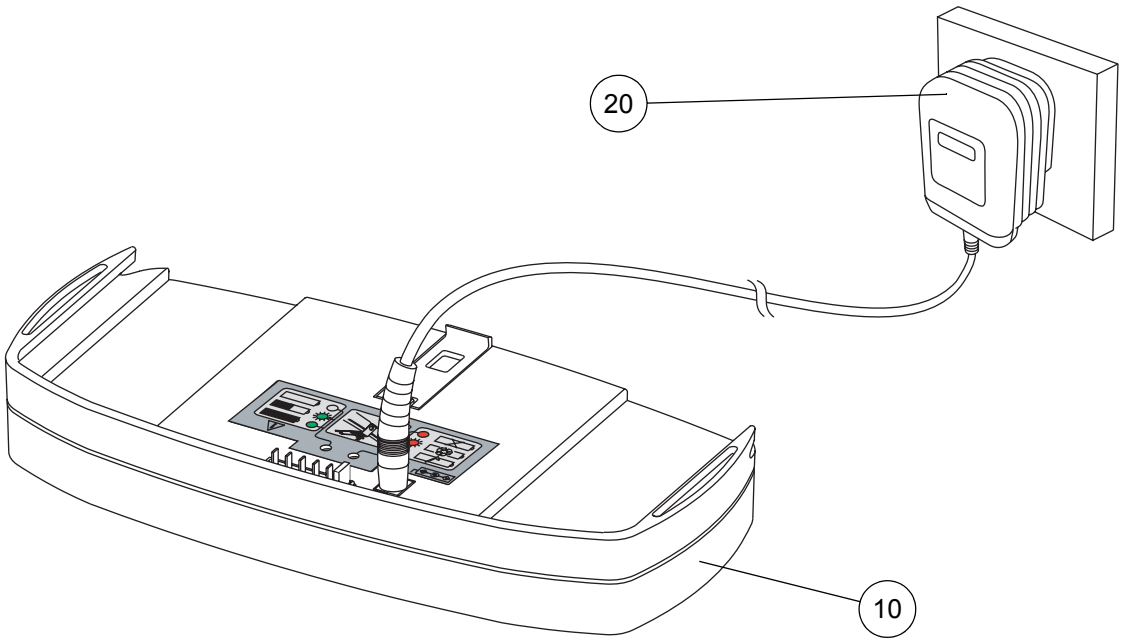


Figure 77 - Charging the Battery Pack using a Battery Charger

Table 43 - Battery Pack and Charger Parts List

Item	Part Number	Description	Qty
10	ABP600	Intelligent Battery Pack Assembly	1
20	ABC600	Battery Charger (USA)	1
-	ABC601	Battery Charger (UK)	1
-	ABC602	Battery Charger (Euro)	1

CHAPTER 10

PATIENT HANDSET

1 General

The patient handset is an optional extra and gives the patient control over the following:

- The **Comfort** settings of the mattress.
- To **Mute** any alarms (except **Power Fail**).

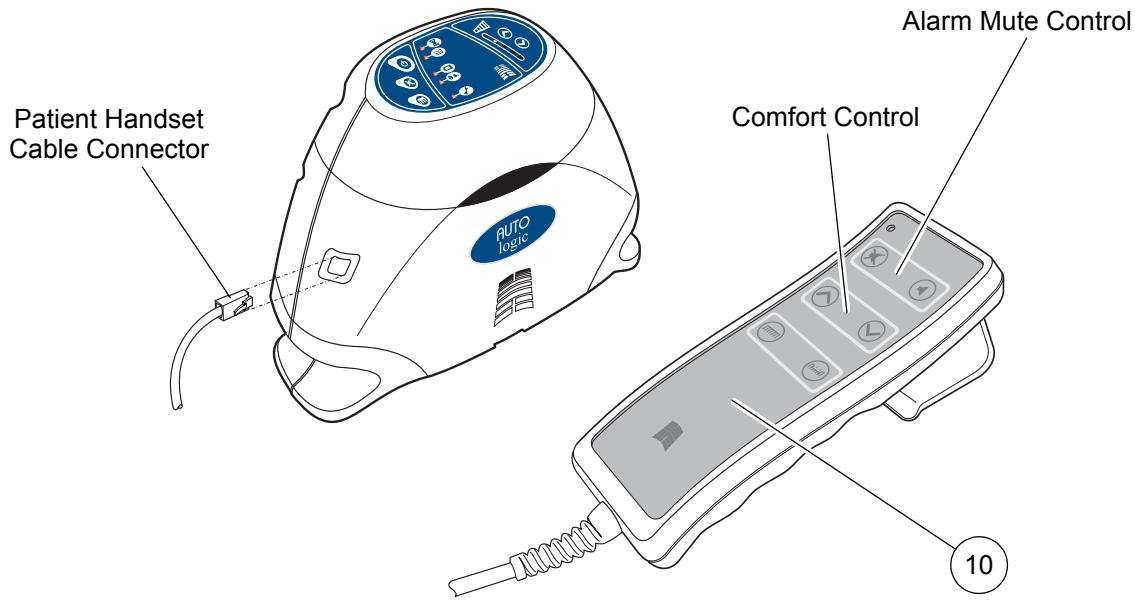
2 Connecting the Patient Handset to the Pump

2.1 Push the cable connector on the patient handset (Fig 78, Item 10) through the grommet in the side of the pump and into the socket on the control PCB inside the pump.

Note: *The retaining clip on the side of the connector must face the front of the pump.*

Note: *Make sure the connector "clicks" into the socket on the control PCB.*

The patient handset is an optional extra and gives the patient control over the comfort settings of the mattress and also enables the patient to mute the alarm.



Note: Patient Handset (Item 10) and Pump are not to scale

Figure 78 - Connecting the Patient Handset

Table 44 - Patient Handset Parts List

Item	Part Number	Description	Qty
10	630403	Patient Handset	1

3 Disconnecting the Patient Handset

WARNING: BEFORE INSERTING THE SCREWDRIVER INTO THE PUMP TO REMOVE PATIENT HANDSET CONNECTOR, MAKE SURE THE UNIT HAS BEEN ISOLATED FROM THE MAINS/POWER SUPPLY BY REMOVING THE MAINS/ POWER PLUG FROM THE WALL SOCKET.

CAUTION: Be careful when using the screwdriver not to damage the patient handset cable and connector, or the socket on the control PCB.

3.1 Insert a small screwdriver through the grommet in the side of the pump, between the patient handset cable and the front of the pump (Refer to Figure 79).

3.2 Carefully use the screwdriver to disengage the retaining clip on the side of the patient handset connector from the socket on the control PCB.

3.3 Pull the patient handset cable and connector out through the grommet.

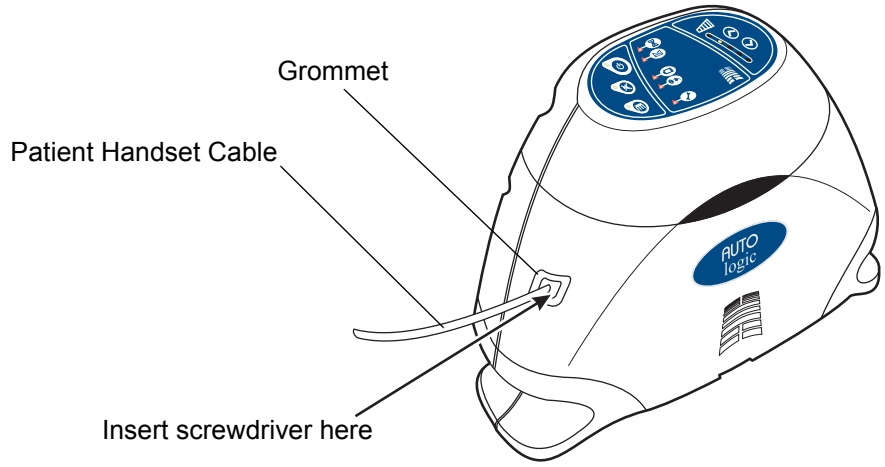


Figure 79 - Disconnecting the Patient Handset

CHAPTER 11

INSTALLING AND RUNNING THE COMMUNICATOR SOFTWARE

1 General

1.1 The Communicator software (Table 45, Item 10) can only be installed on a Laptop PC or a Desktop PC which is running Microsoft® Windows.

1.2 The Communicator software is installed and run on the PC, which sets up a Windows Graphical User Interface (GUI) on the computer. The different menus provide full user control of the pump.

1.3 On some PCs, new software can only be installed by someone with **Administrator** privileges. If there is a **Log On as Administrator** error message at the start of the installation, then you must log off the PC and then log back on as **Administrator** to install the Communicator software.

Table 45 - Communicator Software Parts List

Item	Test Equipment	Part Number
10	Huntleigh Communicator Software, Issue 02 or higher	SERS001-02

2 Auto-Installing the Communicator Software

2.1 Make sure that any other programs running on the PC have been closed.

2.2 Insert the Communicator software CD ROM (Table 45, Item 10) into the CD ROM drive on the PC, and close the CD ROM tray. The Communicator software should start to install.

2.3 After a few seconds, the **Initialisation** dialog box should be displayed (Refer to Figure 80). If it is displayed, then continue with the main installation process on Page 3, Main Installation Process for the Communicator Software.

Figure 80 - Communicator Software Installation - Initialisation

2.4 If after approximately 30 seconds, the **Initialisation** dialog box is not displayed and there is no flashing LED indicator on the front of the CD ROM drive, then manually install the Communicator software (Refer to Page 2, Section 3).

2.5 If there is a **Log On as Administrator** (or similar) error message displayed immediately the auto-installation process starts, then:

2.5.1 Remove the Communicator Software from the CD ROM drive.

2.5.2 Log off the PC.

2.5.3 Log back on as **Administrator** (with the correct password).

Note: *Only IT personnel will have the correct privileges to log on as* ***Administrator****.*

2.5.4 Re-start the auto-installation procedure at Para 2.2, above.

3 Manually Installing the Communicator Software

3.1 Make sure that any other programs running on the PC have been closed.

3.2 Insert the Communicator software CD ROM (Table 45, Item 10) into the CD ROM drive on the PC, and close the CD ROM tray.

Note: *Wait a few seconds for the CD ROM drive to get up to speed.*

3.3 On the PC, click **Start**, and the **Start** menu will be displayed (Refer to Figure 81).

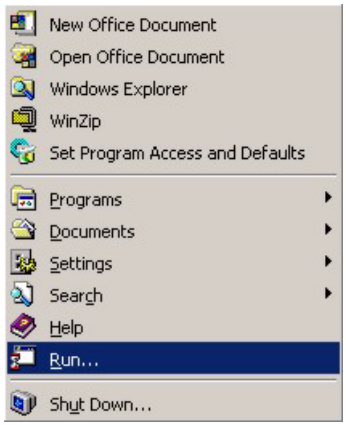


Figure 81 - PC - Start Menu

3.4 Click **Run**, and the **Run** dialog box will be displayed (Refer to Figure 82).

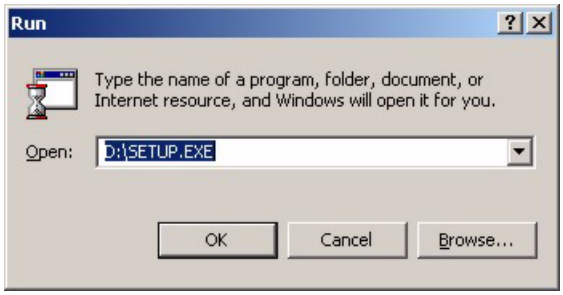


Figure 82 - PC - Run Dialog Box

3.5 To run the **Setup** file from the CD ROM, do the following:

3.5.1 Type **D:\SETUP.EXE**, where **D** is the CD ROM drive on the PC.

3.5.2 Click **OK**.

Note: *You can also click* ***Browse*** *to manually search for the* ***Setup*** *file on the CD ROM.*

3.6 The Communicator software will start to install from the CD ROM.

3.7 After a few seconds, the **Initialisation** dialog box should be displayed (Refer to Figure 80). If it is displayed, then continue with the main installation process on Page 3, Main Installation Process for the Communicator Software.

3.8 If there is a **Log On as Administrator** (or similar) error message displayed immediately the installation process starts, then log off and log back on as **Administrator** (Refer to Para 2.5).

4 Main Installation Process for the Communicator Software

4.1 After the **Initialisation** dialog box has been displayed (Refer to Figure 80), the **Close Other Applications** dialog box will then be displayed (Figure 83).

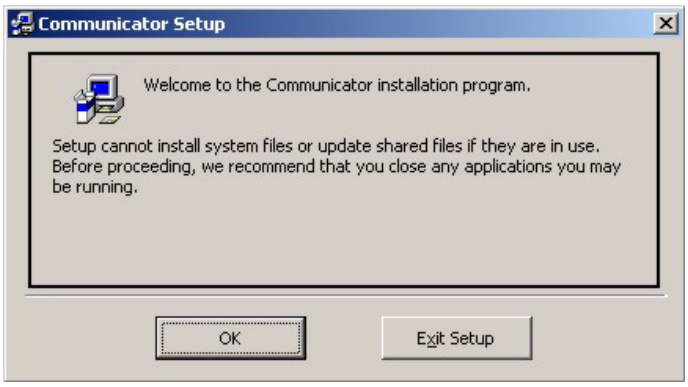

Communicator Setup
Welcome to the Communicator installation program.
Setup cannot install system files or update shared files if they are in use. Before proceeding, we recommend that you close any applications you may be running.
OK
Exit Setup

Figure 83 - Communicator Software Installation - Close Other Applications

4.2 Make sure that any other applications running on the PC have been closed, and then click **OK**. If you are not sure, do the following:

4.2.1 Click **Exit Setup**.

4.2.2 Follow the on-screen instructions to exit the installation process.

4.2.3 Close any other applications running on the PC.

4.2.4 Re-start the installation procedure, to either auto-instal or manually instal the Communicator software.

4.3 The **Start Installation** dialog box will be displayed (Refer to Figure 84).

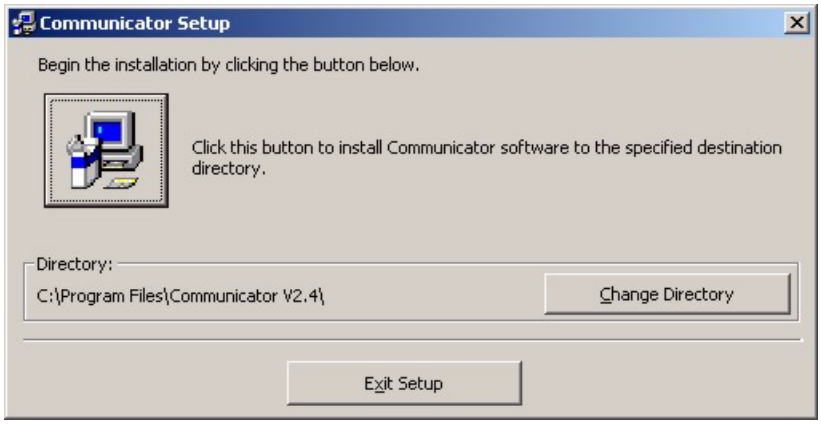

Communicator Setup
Begin the installation by clicking the button below.
Click this button to install Communicator software to the specified destination directory.
Directory:
C:\Program Files\Communicator V2.4\
Change Directory
Exit Setup

Figure 84 - Communicator Software Installation - Start Installation

4.4 Click the button to start the installation process, using the suggested default directory.

4.5 The **Create Short Cuts** dialog box will be displayed (Refer to Figure 85). The default option is already ticked, which will put a shortcut on the PC desktop.

Note: *This puts a **Communicator** icon on the desktop. You can double-click this icon every time you want to run the Communicator software.*

Create Short cuts
Select the Options you want
Put a Shortcut on the Desktop
Put a Shortcut in the Startup Folder so it will start automatically every time you boot up
OK

Figure 85 - Communicator Software Installation - Create Short Cuts

4.6 You can also click in the “tick” boxes in the dialog box to make changes, as follows:

- Add a “tick” in the bottom box to put a shortcut in the Startup folder. This will cause the Communicator software to run automatically every time the PC is powered up.
- Remove the “tick” from the top box to not put a shortcut on the PC desktop. You will then have to search for **Communicator** in the **Programs** menu (under the **Start** menu).

4.7 Normally, you should leave the default setting which is just a “tick” in the top box. Then click **OK** and the **Choose Program Group** dialog box will be displayed (Refer to Figure 86).

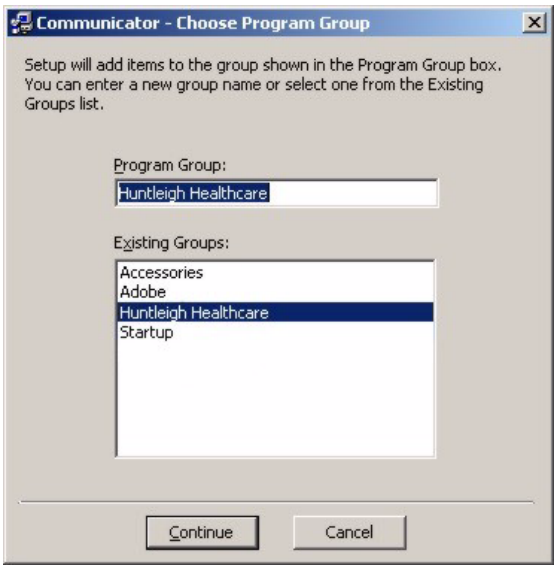

Communicator - Choose Program Group
Setup will add items to the group shown in the Program Group box. You can enter a new group name or select one from the Existing Groups list.
Program Group:
Huntleigh Healthcare
Existing Groups:
Accessories
Adobe
Huntleigh Healthcare
Startup
Continue
Cancel

Figure 86 - Communicator Software Installation - Choose Program Group

4.8 Click **Continue** to use the suggested default program group.

4.9 The installation process will start, and the progress will be indicated by a moving bar (Refer to Figure 87).

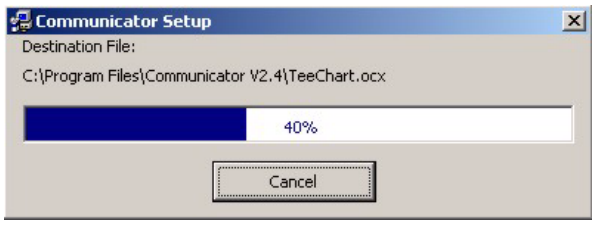


Figure 87 - Communicator Software Installation - Progress

4.10 At the end of the installation, The **Installation Complete** dialog box will then be displayed to indicate that the Communicator software was successfully installed (Refer to Figure 88).

Figure 88 - Communicator Software Installation - Complete

4.11 Click **OK** and the **Setup Message** is then displayed (Refer to Figure 89).

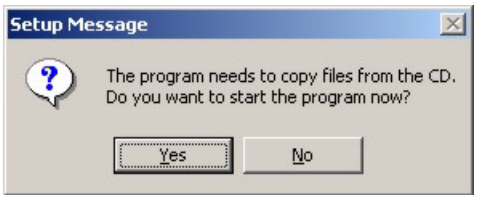


Figure 89 - Communicator Software Installation - Setup Message

4.12 Additional files must be copied from the Communicator software CD ROM to complete the installation, as follows:

4.12.1 Click **Yes** to copy the additional files immediately and start the Communicator program.

4.12.2 Click **No** to exit the installation. The additional files will be copied later when the Communicator program is started for the first time.

4.13 Click **Yes** to start copying the additional files, and then the Communicator program will be started automatically. The **File Location** dialog box is then displayed (Refer to Figure 90).

.

Figure 90 - Communicator Software Installation - File Location

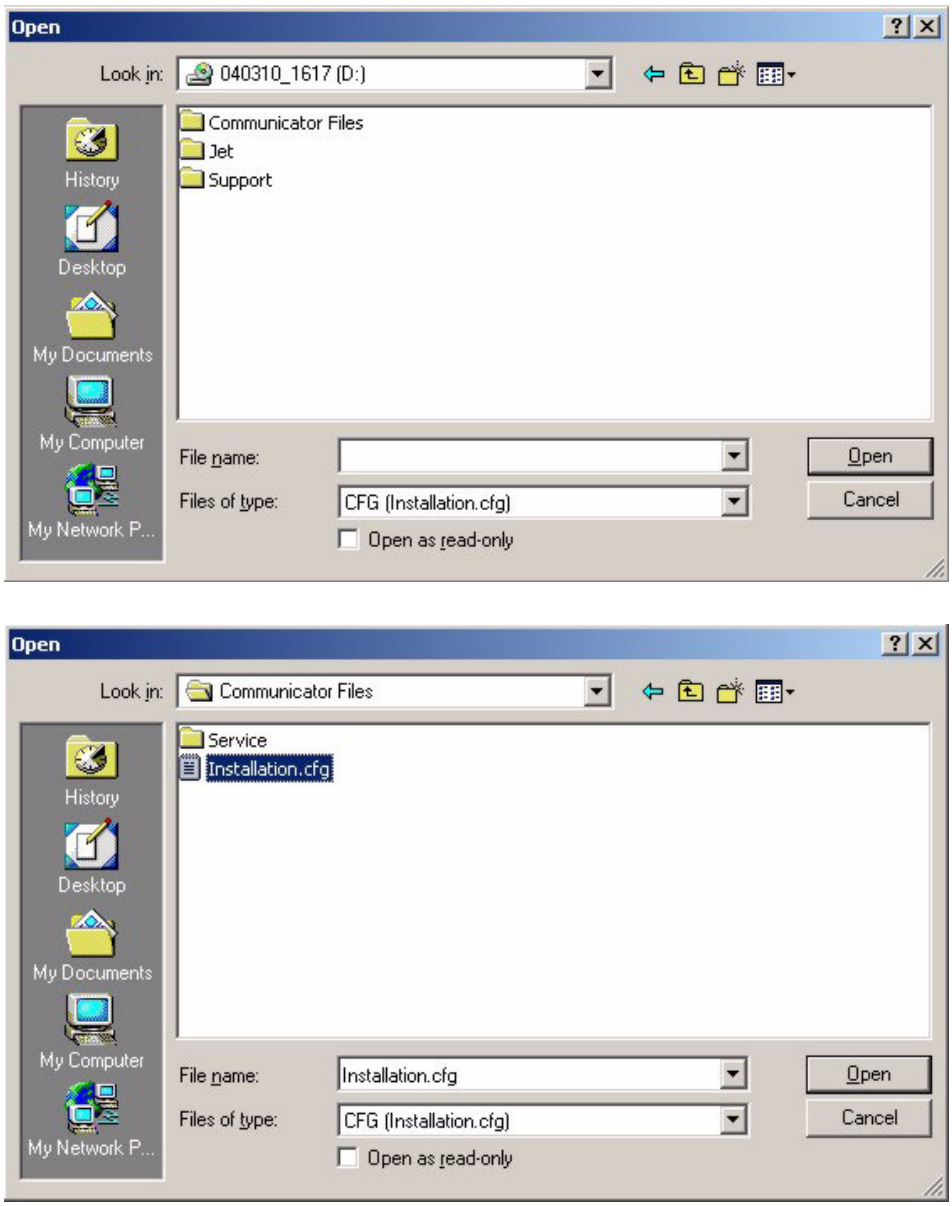


Figure 91 - Communicator Software Installation - Locating "Installation.cfg" on the CD ROM

4.14 Click **OK** and "browse" for the **Installation.cfg** file. The file should be in the **Communicator Files** folder on the CD ROM (Refer to Figure 91).

4.15 Click on the **Installation.cfg** file and click **Open**. The file will be copied to complete the Communicator software installation process.

Note: *While the **Installation.cfg** file is copied, a dialog box is displayed which states **Please wait while the Communicator Files are copied to the computer**.*

4.16 When the **Installation.cfg** file has been copied, the Communicator software will then start to run (Refer to Chapter 4 "Testing", Page 6, Section 6).

4.17 Remove the Communicator software CD ROM from the PC.

5 Running the Communicator Software

5.1 Make sure that the Communicator software has been installed on the PC.

5.2 To run the program, double-click the **Communicator** icon on the PC desktop.

5.3 The program will start to run (Refer to Chapter 4 “Testing”, Page 6, Section 6).

5.4 If there is *no* **Communicator** icon on the PC desktop (Refer toFigure 92):

5.4.1 Click on **Start**.

5.4.2 Select **Programs**.

5.4.3 Select **Huntleigh Healthcare**.

5.4.4 Click **Communicator**.

5.4.5 The program will start to run (Refer to Chapter 4 “Testing”, Page 6, Section 6).

Note: *These are the default locations when the Communicator Software is installed.*

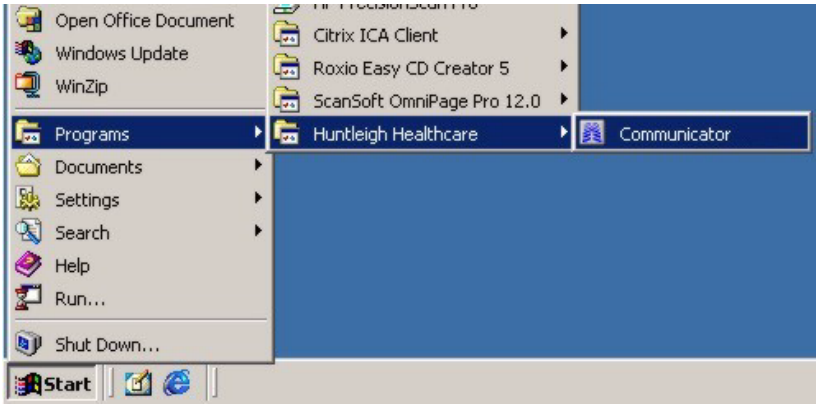


Figure 92 - Running the Communicator Software

CHAPTER 12
TECHNICAL SPECIFICATION

1 Auto Logic / Aura Logic Pump

Physical / Electrical

Size:	Length:	375 mm
	Height:	280 mm
	Depth:	125 mm
Weight:		2.75 kg
Supply Voltage:		90-230 Vac
Supply Frequency		50-60 Hz
Electrical Rating:	50 VA 85 VA	Mains powered, no battery pack connected. Mains powered, with battery pack connected (charging).
Fuse Ratings:	Plug:	5 A to BS1362
	Pump:	3.15 A, T type (Internal Fuse)
Air Inlet Filters:		Service replaceable

Test Standards

All pumps are tested to:	Europe:	EN60601-1
	USA	UL 2601-1 (Classified by Underwriters Laboratories Inc.®) with respect to electric shock, fire and mechanical hazards only in accordance with UL 2601-1
	Canada	CSA C22.2 No. 601-1 (Classified by Underwriters Laboratories Inc.®) with respect to electric shock, fire and mechanical and other hazards only in accordance with CAN/CSA C22.2 No. 601.1
Degree of protection against electric shock:		Class II, Type BF
Degree of protection against ingress of liquids:		Ordinary (not protected)
Mode of operation:		Continuous

Pump Symbols

Run / Standby Button

Alarm Mute

Pump Symbols

Constant Low Pressure (CLP) Mode

Comfort Control

Wait Indicator

Low Pressure Indicator

Battery Low Indicator

Power Fail Indicator

Service Indicator

Alternating Current

Type BF

Double Insulated

Environmental Conditions

Operating:

Temperature Range:	+10°C to +40°C
Relative Humidity:	30% to 75%
Atmospheric Pressure:	700 hPa to 1060 hPa

Storage:

Storage Temperature:	-40°C to +70°C
Relative Humidity:	10% to 100% (non-condensing)
Atmospheric Pressure:	500 hPa to 1060 hPa
Environmental Protection:	Dispose of this unit in accordance with local regulations

2 Intelligent Battery Pack

Size:	Length:	242 mm
	Width:	118 mm
	Height:	37 mm
Weight:		0.8 kg
Electrical Rating:		13.8 Vdc, 4 Ah
Battery Type:		Nickel Metal Hydride (NiMH) Rechargeable Battery
Recharge Time:	Typical:	5 hours
	Maximum:	8 hours

Battery Pack Symbols

Do not dispose of in a dustbin - Recycle

Recycle

Environmental Conditions

Operating:

Temperature Range:	+10°C to +40°C
Relative Humidity:	30% to 75%
Atmospheric Pressure:	700 hPa to 1060 hPa

Storage:

Storage Temperature:	-10°C to +30°C
Relative Humidity:	30% to 75%
Atmospheric Pressure:	500 hPa to 1060 hPa
Environmental Protection:	Do not dispose of the battery pack in a dustbin. Return it to the Huntleigh Service Department to be recycled.

3 Auto Logic 110 - Mattress Overlay

Size:	Length:	2030 mm
	Width:	860 mm
	Height:	115 mm
Cell Material		Polyurethane

4 Auto Logic 200 - Mattress Replacement

Overall Size:	Length:	2030 mm
	Width:	860 mm
	Height:	205 mm
Base Pad Size:	Length:	2030 mm
	Width:	860 mm
	Height:	90 mm
Overlay Size:	Length:	2030 mm
	Width:	860 mm
	Height:	115 mm

5 Aura Logic - Seat Cushion

Size:	Length:	470 mm
	Width:	455 mm
	Height:	50 mm
Cell Material		Polyurethane

CHAPTER 13

PARTS LIST

1 General

On the left side of the **Description** column in the main parts list, the inclusion of none, one or two leading "bullets" is used to indicate the different levels of assembly and sub-assembly, as detailed below.

Symbol		Assembly Level	Example
	(Blank)	Level 1 or Top Assembly	Front Case
•	(Single Bullet)	Level 2 or Sub-Assembly	• Power Supply PCB Assembly
• •	(Double Bullet)	Level 3 or Sub-Sub-Assembly	• • Fuse, 3.15A 20mm Type T

2 Overall Assembly Parts List

Part Number	Description	Fig - Item	Qty
Auto Logic Pump General Assembly			
630001	Auto Logic Pump, UK	-	-
630003	Auto Logic Pump, USA	-	-
630004BE	Auto Logic Pump, Belgium	-	-
630004DE	Auto Logic Pump, Germany	-	-
630004DK	Auto Logic Pump, Denmark	-	-
630004ES	Auto Logic Pump, Spain	-	-
630004FR	Auto Logic Pump, France	-	-
630004IT	Auto Logic Pump, Italy	-	-
630004NL	Auto Logic Pump, Netherlands	-	-
630004SV	Auto Logic Pump, Sweden	-	-
Auto Logic 110 Mattress Overlay General Assembly			
PXA001DAR	Auto Logic 110 Mattress Overlay, Dartex Cover (Standard)	-	-
PXA001ADV	Auto Logic 110 Mattress Overlay, Advantex Cover	-	-
PXA001EVE	Auto Logic 110 Mattress Overlay, eVENT Cover	-	-
Auto Logic 200 Mattress Replacement General Assembly (comprises Mattress Overlay and Mattress Base Pad)			
PXB001DAR	Auto Logic 200 Mattress Replacement, Dartex Cover (Standard)	-	-

Part Number	Description	Fig - Item	Qty
PXB001ADV	Auto Logic 200 Mattress Replacement, Advantex Cover	-	-
PXB001EVE	Auto Logic 200 Mattress Replacement, eVENT Cover	-	-
	Aura Logic Seat Cushion General Assembly		
PXS001	Aura Logic Seat Cushion	-	-
	Intelligent Battery Pack Assembly		
ABP600	Intelligent Battery Pack	-	-
	Patient Handset		
630403	Patient Handset	-	-

3 Pump Assembly Parts List

Part Number	Description	Fig - Item	Qty
	Front Case Assembly		
630320	Front Case (Moulding only)	33-20 55-10 56-10 57-10	1
630100	• Manifold Assembly (including RFID Coil Antenna), Spares Item	35-10 39-10	1
630055	• • RFID Coil Antenna, Long	39-20	1
BP196	• • Cable Tie	39-30	1
630364	• • O-Ring, 6.8mm dia	41-10	3
509051	• Compressor Assembly, Series 6, 5.5V 50/60Hz	35-70 42-10 43-10 45-10	1
509317	• • Air Inlet Filter, Compressor Assembly	50-30	1
509320	• • Air Inlet Filter Holder	50-40	1
507316	• • Compressor Mounting Bracket	42-20 43-20	1
FAS218	• • Screw, 4mm dia x 12 Pan Head	42-30	2
507380	• • Compressor Bracket Grommet	43-30	2
507317	• • Compressor Bump Stop	43-40	2
FAS223	• • Screw, 3 dia x 10 Pan Head	43-50	2

Part Number	Description	Fig - Item	Qty
630335	• • Elbow	43-60 45-20	1
630400	• Control PCB (Printed Circuit Board) Assembly	35-40 47-10 48-30 51-30	1
151457	• • Rechargeable Battery, Spares Item	48-10	1
BP196	• • Cable Tie	48-20	1
FAS145	• • Screw, 3 dia x 8 Pan Head	47-20	4
507058	• Power Supply PCB (Printed Circuit Board) Assembly	35-80 42-40 46-10 50-20	1
507422	• • Fuse, 3.15A 20mm Type T	50-10	2
FAS223	• • Screw, 3 dia x 10 Pan Head	46-20	6
630448	• Membrane Label, Blue, Iconised	51-10	1
630328	• LCD Window Cover	51-20 57-20	1
151098	• Silencer Bag Assembly	35-50	1
630334	• Tube, Compressor Assembly - Silencer Bag Assembly	35-60 43-70 45-30	1
630349	• Tube, Manifold Assembly - Silencer Bag Assembly	35-30	1
REF	• Tube, Manifold Assembly - Control PCB Transducer	35-20	1
630318	• PCB Mounting Pillar	46-30 47-40	4
FAS223	• • Screw, 3 dia x 10 Pan Head	47-30	4
507410	• Connector Sealing Strip	46-40	2
507413	• Rubber Foot	33-40 55-40	2
630373	• Noise-Reduction Foam, Front Case	55-20	1
BP027	• Compressor Support Rubber	55-30	2
BP042	• Ferrite Magnet	56-50	1
507386	• • Magnet Mounting Pad	56-60	1
507410	• Connector Sealing Strip	56-70	1
630399	• Case Strengthening Strip, Self-Adhesive	55-80	1
630324	• IRDA LED Lens	57-30	1
630327	• Grommet, Patient Handset	57-40	1

Part Number	Description	Fig - Item	Qty
630319	• Battery Socket Cover	57-50	1
630398	• Pump Label, Auto Logic	57-60	1
	Rear Case Assembly		
630321	Rear Case (Moulding only)	33-10 53-10 54-10	1
630415	• Mains/Power Cordset, 6m Coiled (UK)	32-10	1
630416	• Mains/Power Cordset, 6m Coiled (Euro)	32-10	1
630417	• Mains/Power Cordset, 6m Coiled (USA)	32-10	1
630329	• IEC Connector Cover	32-20	1
FAS223	• • Screw, 3 dia x 10 Pan Head	32-30	2
BP044	• • Pad	32-40	1
630326	• Filter Cover	32-60	1
507374	• • Air Inlet Filter Felt	32-50	1
FAS145	• • Screw, 3 dia x 8 Pan Head	32-70	1
630315	• Hook	34-10	2
630325	• • Hook Cover	34-20	2
FAS225	• • Screw, 3 dia x 16 Pan Head	34-30	8
FAS225	• Screw, 3 dia x 16 Pan Head	33-30	5
507413	• Rubber Foot	33-40 53-20	6
630330	• Handle Insert	53-30	1
630383	• Noise-Reduction Foam, Rear Case	54-40	1
BP027	• Compressor Support Rubber	54-50	2
	Pump Label Sets		
TBA	Pump Serial Number Label (UK)	49-10	1
TBA	Pump Product Label	49-20	1

4 Mattress Overlay Assembly Parts List

Part Number	Description	Fig - Item	Qty
Top Cover Assembly Auto Logic 110 Mattress Overlay			
PXA080	Top Cover Assembly, Dartex (Standard)	-	1
PXA082	Top Cover Assembly, Advantex	-	1
PXA084	Top Cover Assembly, eVENT	-	1
Top Cover Assembly Auto Logic 200 Mattress Replacement			
PXB080	Top Cover Assembly, Dartex (Standard)	-	1
PXB082	Top Cover Assembly, Advantex	-	1
PXB084	Top Cover Assembly, eVENT	-	1
Cell Assemblies			
PXA050	Cell Assembly, Torso (Cell-in-Cell)	59-10	10
PXA060	Cell Assembly, Standard	59-20	10
Base Sheet Assembly			
PXA170	Base Sheet Assembly, for Mattress Overlay only	-	1
PXB170	Base Sheet Assembly, for Mattress Replacement only	-	1
PXA090	• Manifold Tube Assembly	63-10	1
PXA335	• • Partial Non-Return Valve Assembly	64-10	2
627389	• • Non-Return Valve	64-20	1
PXA059	• • Tube Assembly, Low Air Loss Patch	63-20 64-30	1
PXA057	• Pump Tubeset Assembly	68-10	1
PXA056	• CPR Assembly	68-20	1
PXA074	• Manifold Connector Assembly, Mattress Overlay	68-30	1
PXA073	• Retaining Strap Assembly, Pair	68-40	4
Press Stud Replacement			
MIS143	Hand Press Tool	69-10	1
MIS142	Die Set (for Hand Press Tool)	69-20	1
FAS169	Stud Post, Schaeffer Plastic	-	A/R
FAS170	Stud Cap, Schaeffer Plastic	-	A/R
FAS171	Stud Socket, Schaeffer Plastic	-	A/R

5 Mattress Base Pad Assembly Parts List

Part Number	Description	Fig - Item	Qty
Base Pad Sub-Assembly			
PXB055	Base Pad Sub-Assembly	72-10	1
PXA325	• Manifold Connector Assembly, Mattress Base Pad	70-10 71-10	1
PXA358	• • Draw Latch	70-20 71-20	2
PXA359	• • Screw, 2.5mm dia x 10mm Csk Head	71-30	4
PXB073	• Retaining Strap Assembly	72-20	8
Press Stud Replacement			
MIS143	Hand Press Tool	69-10	1
MIS142	Die Set (for Hand Press Tool)	69-20	1
FAS169	Stud Post, Schaeffer Plastic	-	A/R
FAS170	Stud Cap, Schaeffer Plastic	-	A/R
FAS171	Stud Socket, Schaeffer Plastic	-	A/R

6 Seat Cushion Assembly Parts List

Part Number	Description	Fig - Item	Qty
Top Cover Assembly			
PXS062	Top Cover Assembly	-	1
Seat Cushion Assembly			
PXS059	• Base Assembly	73-10	1
PXS056	• Cell Assembly, Welded	73-20	1
403305	• • Connector, Elbow	73-30	11
PXS302	• • Connector, Straight	73-40	1
401300	• • T-Connector	73-50	2
PXS309	• • Connector, Stepped	73-60	2
PXS067	• • Tube Assembly, Internal	73-70	1
PXS165	• Pump Tubeset Assembly	73-80	1
PXS066	• Retaining Strap Assembly, Pair	74-10	2

7 Intelligent Battery Pack Assembly

Part Number	Description	Fig - Item	Qty
Battery Pack Assembly			
ABP600	Intelligent Battery Pack Assembly	75-10 77-10	1
Battery Charger			
ABC600	Battery Charger (USA)	77-20	1
ABC601	Battery Charger (UK)	77-20	1
ABC602	Battery Charger (Euro)	77-20	1

8 Test Equipment

Part Number	Description	Fig - Item	Qty
Pump Flow, Pressure and Function Test Equipment			
MIS216	IR Interface Module	-	-
507104	Serial Communications Pack	-	-
-	Laptop / Desktop PC running Microsoft® Windows	-	-
PRE073	Flow / Pressure Rig, 3-26 ltr/min	-	-
630105	3-way Pump Tubeset Adaptor (Spares Item)	-	-
SERS001-**02**	Huntleigh Communicator Software, Version **02** or higher	-	-
Electrical Safety Test Equipment			
-	Insulation Resistance Tester (Megger), 500 Vdc	-	-
-	Portable Appliance Tester	-	-
-	Dielectric Strength Tester (Flash Tester), 3.0 kVac	-	-
Mattress Replacement, Overlay and Seat Cushion Inflation Test Equipment			
PRE073	Flow / Pressure Rig, 3-26 ltr/min	-	-
-	Portable Inflation Test Unit	-	-
-	Stopwatch	-	-

CHAPTER 14

SERVICE CONTACT DETAILS

Africa

Huntleigh Africa (Pty) Limited
126 B Sarel Baard Crescent
Rooishuiskraal, Pretoria, South Africa
T +27 1266 10368
F +27 1266 10380

Australia

Huntleigh Healthcare Pty Limited
PO Box 330
Hamilton Hill
Western Australia 6963
T +61 8 9 337 4111
F +61 8 9 337 9077

Belgium

Huntleigh Healthcare NV SA
Stapelplein 70, 9000 Gent, Belgium
T +32 9 265 8770
F +32 9 265 8771

Denmark

Huntleigh Healthcare A/S
Vassingerødvej 52, 3540 Lynge, Denmark
T +45 4 913 8486
F +45 4 913 8487

France

HNE Médical
451 Chemin de Champivost
BP20, 69579 Limonest, Cedex, France
T +33 (0)4 78 66 62 66
F +33 (0)4 78 66 62 67

Germany

HNE Huntleigh Nesbit Evans
Healthcare GmbH
Im Hülsenfeld 19, 40721 Hilden, Germany
T +49 (0)2103 97 11 0
F +49 (0)2103 97 11 80

India

Indian Liaison Office
61 Goldmist, Gulmohar Road
Juha Scheme, Mumbai 400 049
India

Middle East

Huntleigh Technology PLC
307 Sh. Zayed Road
Dubai
United Arab Emirates

The Netherlands

Huntleigh Healthcare BV
Antennestraat 45, 1322 AH Almere
The Netherlands
T +31 36 533 5588
F +31 36 547 5075

New Zealand

Huntleigh Healthcare Ltd
Unit 6/38 Eaglehurst Road
Ellerslie, Auckland, NZ
T +64 9 525 2488
F +64 9 525 2433

Singapore

Huntleigh Healthcare Pte Limited
Block 603, Elias Road, #08-232
Singapore 510603
T +61 8 9 309 3083
F +60 8 9 309 4582

Sweden

Huntleigh Liljenberg AB
Box 30012
200 61 Limhamm, Sweden
T +46 40 49 57 80
F +46 40 49 43 75

UK

Huntleigh Healthcare Limited
310-312 Dallow Road
Luton
Bedfordshire
LU1 1TD
T +44 (0)1582 413104
F +44 (0)1582 459100

United States of America

Huntleigh Healthcare Inc
40 Christopher Way
Eatontown,New Jersey 07724, USA
T +1 732 578 9898
F +1 732 578 9889

Huntleigh Latin America Inc
2602 North West 97th Avenue
Miami, Florida, 33172, USA
T +1 305 463 0526
F +1 305 463 0216

HUNTLEIGH HEALTHCARE LIMITED

310-312 Dallow Road, Luton,
Bedfordshire, LU1 1TD, United Kingdom
T: +44 (0)1582 413104 **F:** +44 (0)1582 459100
Sales Enquiries **T:** +44 (0) 1582 745700 **F:** +44 (0)1582 745745
Service Enquiries **T:** +44 (0)1582 745777 **F:** +44 (0)1582 745869
Huntleigh Rentals 24 Hour Helpline **Lo**-call 08457 342000
W: www.huntleigh-healthcare.com

Registered No: 942245 England. Registered Office As Above

93/42/EEC 943447

® and ™ are trademarks of Huntleigh Technology PLC
As our policy is one of continuous improvement, we reserve the right to modify designs without prior notice.

GENLIT004A_03

SER0006_2